



**PYRIDIDIUM MERCURY DISPOSAL SITE NO. 1  
START FOUR  
ADMINISTRATIVE RECORD FILE  
INDEX OF DOCUMENTS**

**1.0 FACTUAL INFORMATION/DATA**

**1.6 Sampling Plan**

- P. 100001- Letter to Ms. Irmee Huhn, Removal Action Branch, U.S. EPA, Region II,  
100026 from Mr. Gene P. Fowler, Project Manager, Roy F. Weston, Inc., re:  
Work and Sampling Plan - Pyridium Mercury Disposal Site, November 17,  
1997. (Attached plan: Sampling QA/QC Work Plan, Pyridium Mercury  
Disposal Site # 1, Harriman, Orange County, New York, prepared by  
Superfund Technical Assessment and Response Team, Roy F. Weston,  
Inc., prepared for U.S. Environmental Protection Agency, Region II,  
Removal Action Branch, December 10, 1997.)

**1.7 Sampling Data/Data Summary Sheets/Chain of Custody Forms**

- P. 100027- Report: Sampling Trip Report, Pyridium Mercury Disposal Site, prepared  
100054 by Mr. Gene P. Fowler, Region II, Superfund Technical Assessment and  
Response Team, Roy F. Weston, Inc., prepared for U.S. EPA, Region II,  
December 26, 1997.
- P. 100055- Report: Pyridium Mercury Site, Harriman, New York, prepared by Ms.  
100101 Jennifer Leahy, Inorganic Data Reviewer, Superfund Technical  
Assessment and Response Team, Region II, Roy F. Weston, Inc., prepared  
for Ms. Irmgard Huhn, Removal Action Branch, U.S. EPA, Region II,  
February 3, 1998.
- P. 100102- Letter to Ms. Irmee Huhn, Removal Action Branch, U.S. EPA, Region II,  
100119 from Mr. Michael Mahnkopf, Project Manager, Superfund Technical  
Assessment and Response Team, Roy F. Weston, Inc., re: Sampling Trip  
Report, Pyridium Mercury Disposal Site No. 1, Harriman, New York,  
April 7, 1998. (Attached report: Sampling Trip Report, Pyridium Mercury  
Disposal Site No. 1, prepared by Mr. Michael Mahnkopf, Region II,  
Superfund Technical Assessment and Response Team, Roy F. Weston,  
Inc., prepared for U.S. EPA, Region II, April 7, 1998.

## **2.0 DECISION DOCUMENTS**

### **2.2 Action Memoranda & Amendments**

- P. 200001- Request for a Removal Action Restart and Ceiling Increase for the  
200047 Pyridium Mercury Disposal Site No. 1, Village of Harriman, Orange  
County, New York, Action Memorandum, to Ms. Jeanne M. Fox, Regional  
Administrator, U.S. EPA, Region II, from Ms. Irmgard P. Huhn, On-Scene  
Coordinator, Removal Action Branch, U.S. EPA, Region II, through Mr.  
Richard L. Caspe, Director, Emergency and Remedial Response Division,  
U.S. EPA, Region II, March 5, 1998.

## **5.0 OTHER AGENCY DOCUMENTATION**

### **5.4 ATSDR Health Assessments/Other Health Studies**

- P. 500001- Report: ATSDR Regional Information System 2.4, Record of Activity,  
500002 prepared by Mr. Steven Jones, prepared for Mr. Eric Wilson, On-Scene  
Coordinator, Removal Action Branch, U.S. EPA, Region II, July 13, 1995.

## **6.0 POLICY AND GUIDANCE**

### **6.2 Guidance Documents**

- P. 600001- Memorandum to the file, from Ms. Irmgard Huhn, U.S. EPA, Region II,  
600001 re: Incorporation by Reference of Prior Administrative Records into the  
Current Administrative Record, April 21, 1998.



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SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT 68-W5-0019

17 November 1997

Ms. Irmee Huhn  
U.S. Environmental Protection Agency  
Removal Action Branch  
2890 Woodbridge Avenue  
Edison, NJ 08837

**EPA CONTRACT NO: 68-W5-0019**  
**TDD NO: 02-97-11-0004**  
**DOCUMENT CONTROL NO: START-02-F-01479**  
**SUBJECT: WORK AND SAMPLING PLAN- Pyridium Mercury Disposal Site**


Dear Ms. Huhn:

Enclosed please find the Work and Sampling Plan for the Pyridium Mercury Disposal Site located at Harriman, Orange County, New York.

If you have any questions, please do not hesitate to call me at (732) 225-6116.

Very truly yours,

ROY F. WESTON, INC.

  
Gene P. Fowler  
Project Manager

Enclosure

cc: TDD File  
Joseph M. Soroka (START)

100001

**SAMPLING QA/QC WORK PLAN**  
**PYRIDIDIUM MERCURY DISPOSAL SITE #1**  
**Harriman, Orange County, New York**

Prepared by

Superfund Technical Assessment and Response Team  
Roy F. Weston, Inc.  
Federal Programs Division  
Edison, New Jersey 08837

Prepared for

U.S. Environmental Protection Agency  
Region II - Removal Action Branch  
Edison, New Jersey 08837

DCN #: START-02-F-01479  
TDD #: 02-97-11-0004  
EPA Contract No.: 68-W5-0019

Approved by:

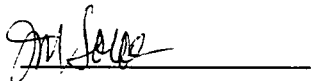
START



Gene P. Fowler  
START Project Manager

Date: 11-17-97

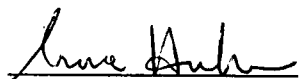
START



Joseph M. Soroka  
Quality Assurance Officer

Date: 11/14/97

EPA



Irmee Huhn  
On-Scene Coordinator

Date: 12/10/97

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## **1.0 BACKGROUND**

The Pyridium Mercury Disposal Site was a mobile home park located in Harriman, Orange County, New York (Attachment A). Mercury contamination at the site is suspected to be the result of the use of mercury-contaminated industrial waste to fill a wetland area on which the mobile home park was built.

In October 1994, the Roy F. Weston Technical Assistance Team (TAT) conducted a study to determine the nature and horizontal extent of contamination in surface soils at the site. Surface soils (0-6") were screened in-situ using an X-Ray Fluorescence Analyzer (XRF). Samples of the waste material were collected and analyzed to determine toxicity using the Toxicity Characteristic Leaching Procedure (TCLP). The waste was determined to be a chemical substrate contaminated with a mercuric or mercurous salt. Results of TCLP analysis were below the regulatory limits for all analytes. Based on this analysis, the waste was determined not to exhibit the characteristic of toxicity as defined in the Resource Conservation and Recovery Act (RCRA).

## **2.0 DATA USE OBJECTIVES**

The objective of this sampling event is to determine the presence or absence of mercury contamination at the surface and subsurface of the property boundary.

The soil sampling will consist of 40 surface soil samples and 5 subsurface soil samples collected along the perimeter of the site.

## **3.0 QUALITY ASSURANCE OBJECTIVES**

The overall Quality Assurance (QA) objective for chemical measurement data associated with this sampling event is to provide analytical results for screening. The QA program will incorporate Quality Control (QC) procedures for field sampling, chain of custody, laboratory analyses, and reporting to assure generation of sound analytical results.

The EPA On-Scene Coordinator (OSC) has specified a Level 1 QA objective (QA-1). Details of this QA level are provided in Section 6.0.

The objective of this project/event applies to the following parameters:

**TABLE 1**

**QUALITY ASSURANCE OBJECTIVES**

QA Parameters	Matrix	Intended Use of Data	QA Objective
Total Mercury	Soil	Determine the presence/absence of hazardous substances	QA-1

A Field Sampling Summary is attached in Table 2 and a QA/QC Analysis and Objectives Summary is attached in Table 3. Section 4.2, Sampling Design, provides information on analyses to be performed on the individual soil samples.

**TABLE 2**

**FIELD SAMPLING SUMMARY**

Analytical Parameters	Matrix	Container Size	Preservative	Holding <sup>1</sup> Time	Subtotal Samples	Rinsate Blanks	Trip Blanks	Duplicate Samples	MS/MSD Samples	Total Field Samples
Total Mercury	Soil	4 oz. glass jars	Cool to 4° C	28 days	45	NR	-	-	-	45

NR - Not Required, dedicated sampling equipment to be used.

1 - Holding times from date of sampling

**TABLE 3**

**QA/QC ANALYSIS AND OBJECTIVES SUMMARY**

Analytical Parameters	Matrix	Analytical Method Reference	QA/QC Quantitation Limits	QA Objective
Total Mercury	Soil	CLP SOW ILMO 4.0	As per contract	QA-1

Note: CLP-format deliverables required for all data packages.



## **4.0 APPROACH AND SAMPLING METHODOLOGIES**

### **4.1 Sampling Equipment**

In order to avoid cross-contamination, surface soil samples will be collected with dedicated plastic scoops and spatulas. Subsurface soil samples will be collected with non-dedicated stainless steel augers that will be decontaminated between boreholes. The samples will be homogenized in stainless steel bowls.

Sampling equipment decontamination will follow the procedures outlined in the Sampling Equipment Decontamination EPA/ERT SOP #2006 (Attachment B). For example, the stainless steel equipment will be decontaminated using the following process:alconox potable water wash, potable water rinse, ten percent nitric acid rinse, deionized water rinse, and air dry.

### **4.2 Sampling Design**

Forty surface (0-6 inches) and five subsurface (18-24 inches) soil samples will be collected and analyzed for total mercury. The soil samples will be collected at 40 foot intervals along the property boundary. The five subsurface soil samples will be collected beneath stone at the northwest location along the edge of the pavement (Attachment A). A pick will be required to access the soil. No QA/QC samples will be taken.

This sampling design is based on information currently available and may be modified on site in light of field screening results and other acquired information. All deviations from the sampling plan will be noted in the Sampling Trip Report.

Analysis of the samples will be scheduled with a 48 hour verbal turnaround time to allow scheduling of sampling the following week and to secure the site and possibly excavate soil prior to the ground freezing.

### **4.3 Standard Operating Procedures (SOPs)**

#### **4.3.1 Sample Documentation**

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialing the error.

### **FIELD LOGBOOK**

The field logbook is essentially a descriptive notebook detailing site activities and observations so

that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Sample and sample location identification and description\*.
9. Subcontractor information and names of on-site personnel.
10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

\* The description of the sample location will be noted in such a manner as to allow the reader to reproduce the location in the field at a later date.

### SAMPLE LABELS

Sample labels will clearly identify the particular sample, and should include the following:

1. Site/project number.
2. Sample identification number.
3. Sample collection date and time.
4. Designation of sample (grab or composite).
5. Sample preservation.
6. Analytical parameters.
7. Name of sampler.

Sample labels will be written in indelible ink and securely affixed to the sample container. Labels will be covered with clear waterproof tape to protect the label from water and solvent. Tie-on labels can be used if properly secured.

### CHAIN OF CUSTODY RECORD

A chain of custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a custody seal.

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The chain of custody record should include (at minimum) the following:

1. Sample identification number.
2. Sample information.
3. Sample location.
4. Sample date.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

### **CUSTODY SEALS**

Custody seals demonstrate that a sample container has not been tampered with, or opened. The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

#### **4.3.2 Sampling SOPs**

##### **Soil Sampling**

Soil sampling activities will be conducted in accordance with the guidelines outlined in EPA/ERT Soil Sampling SOP #2012 (Attachment C).

##### **Decontamination**

Decontamination procedures will be conducted in accordance with the guidelines outlined in the EPA/ERT SOP #2006 (Attachment B). A ten percent nitric acid rinse will be used for the sampling equipment.

#### **4.3.3 Sample Handling and Shipment**

Each of the sample bottles will be sealed and labeled according to the following protocol. Caps will be secured with custody seals. Bottle labels will contain all required information including site/project code and sample number, time and date of collection, analyses requested, and preservative used. Sealed bottles will be placed in large metal or plastic coolers, and padded with an absorbent material such as vermiculite. All packaging will conform to IATA Transportation regulations for overnight carriers.

All sample documents will be affixed to the underside of each cooler lid in a plastic bag. The lid will be sealed and affixed on at least two sides with custody seals so that any sign of tampering is easily visible.



#### **4.3.4 Sample Containers**

All sample containers will meet the QA/QC specifications in OSWER Directive 9240.0-05A, "Specifications and Guidance for the Contaminant Free Sample Containers".

#### **4.4 Analytical Methods**

Analytical methods to be utilized in the analyses of samples collected during this sampling event are detailed in Table 3.

#### **4.5 Schedule of Activities**

<b><u>Event</u></b>	<b><u>Duration</u></b>	<b><u>Scheduled Date</u></b>
Surface and subsurface soil sampling	One day	November 13, 1997

#### **4.6 Disposal of PPE and Contaminated Materials**

All used sampling scoops and used protective equipment will be bagged and stored on site in a secure area until arrangement for off-site disposal can be made.

### **5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES**

The EPA OSC, Irmee Huhn, will provide overall direction to the staff concerning project sampling needs, objectives, and schedule. The Project Manager (PM), Gene P. Fowler, will be the primary point of contact with the OSC. The PM is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables. The Site QC Coordinator will be responsible for ensuring field adherence to the Sampling QA/QC Plan and recording of any deviations. The START Analytical Services Coordinator, Smita Sumbaly, will be the primary project team site contact with the subcontracted laboratory, if necessary.

The following sampling personnel will work on this project:

<b><u>Personnel</u></b>	<b><u>Responsibility</u></b>
Gene P. Fowler	START; Project Manager and sampler;
Ilene Presworksky	START; Sampler; and sample documentation;
Mike Mahnkopf	START; Sampler and QA/QC; and
Irmee Huhn	EPA; On-Scene Coordinator.



<u>Lab Name/Location</u>	<u>Sample Type</u>	<u>Parameters</u>
NY Test Environmental 60 Seaview Boulevard Port Washington, NY 11050 (516) 625-5500	Soil	Total Mercury

## 6.0 QA REQUIREMENTS

The following requirements apply to the respective QA Objectives and parameters identified in Section 3.0. The QA Protocols for a Level 1 QA objective sampling event are applicable to all sample matrices and include:

1. Sample documentation in the form of field logbooks, appropriate field data sheets, and chain of custody records (chain of custody records are optional for field screening locations).
2. Narrative statement regarding the analytical method followed and ability to comply with the method, in addition to any problems encountered and corrective actions taken.
3. Tabulated sample data results and corresponding detection level.
4. Analytical holding times as determined from the time of sample collection through analysis. These will be documented in the field logbook or by the laboratory in the final data deliverable package.
5. Initial and continuous instrument calibration data.
6. Corresponding method and instrument blank analyses data.

## 7.0 DELIVERABLES

The START PM, Gene P. Fowler, will maintain contact with the EPA OSC, Irmee Huhn, to keep her informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting.

Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

### TRIP REPORT

A trip report will be prepared to provide a detailed accounting of what occurred during each sampling mobilization. The trip report will be prepared within one week of the last day of each sampling mobilization. Information will be provided on time of major events, dates, and personnel on site (including affiliations).

### MAPS/FIGURES

Maps depicting site layout, contaminant source areas, and sample locations will be included in the trip report, as appropriate.

### ANALYTICAL REPORT

An analytical report will be prepared for samples analyzed under this plan. Information regarding the analytical methods or procedures employed, sample results, QA/QC results, chain of custody documentation, laboratory correspondence, and raw data will be provided within this deliverable.

### DATA REVIEW

A review of the data generated for samples analyzed under this plan will be undertaken. The assessment of data acceptability will be provided separately or as part of the analytical report.

## **8.0 DATA VALIDATION**

Data generated under this QA/QC Sampling Plan will be evaluated according to criteria contained in the Removal Program Data Validation Procedures that accompany OSWER Directive number 9360.4-1 and in accordance with Region II guidelines.

Laboratory analytical results will be assessed by the data reviewer for compliance with required precision, accuracy, completeness, representativeness, and sensitivity.

## **9.0 SYSTEM AUDIT**

The field QA/QC Officer will observe sampling operations and ensure compliance with the QA/QC requirements of the project/sampling event.

## **10.0 CORRECTIVE ACTION**

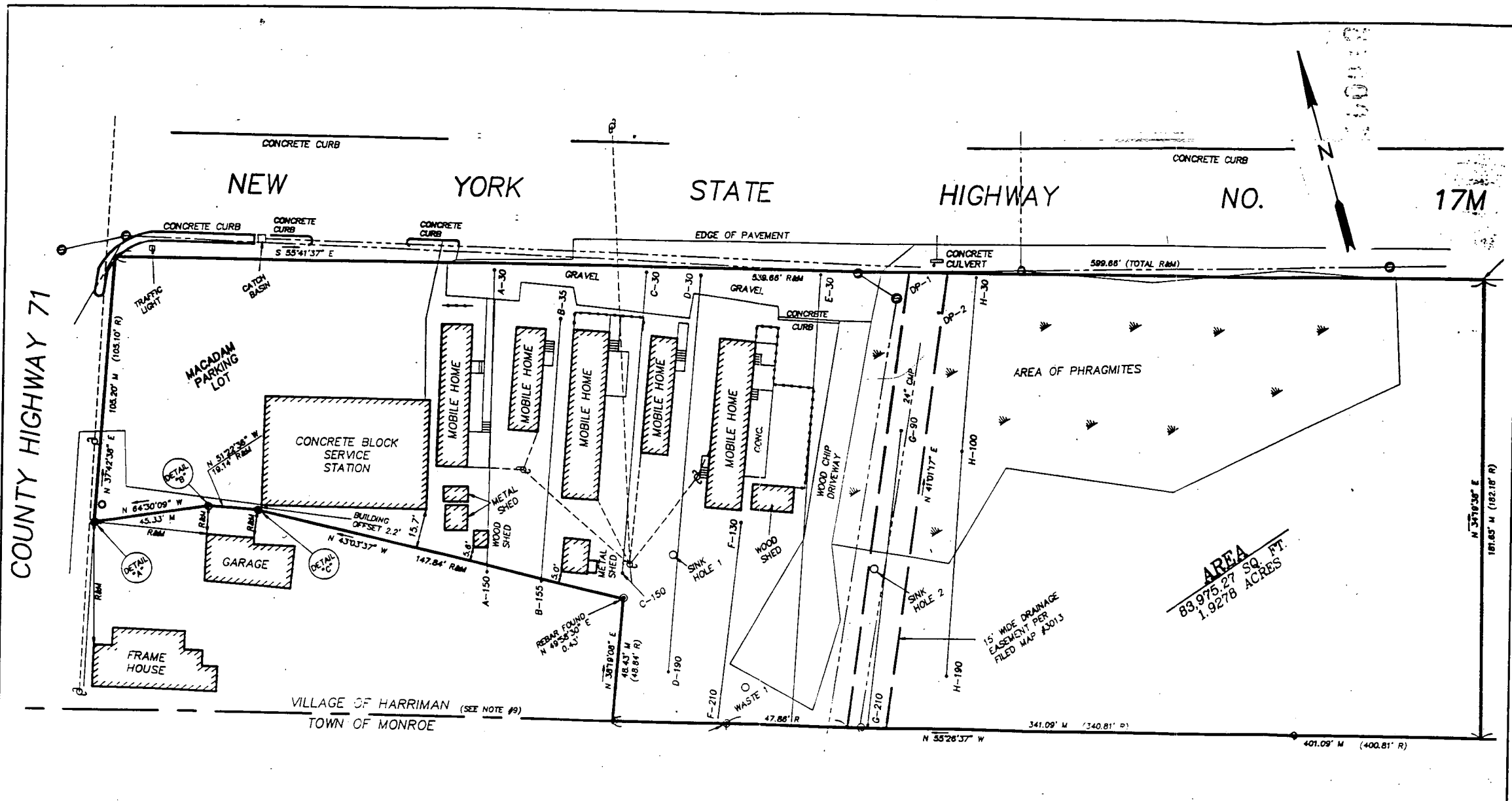
All provisions will be taken in the field and laboratory to ensure that any problems that may develop will be dealt with as quickly as possible to ensure the continuity of the project sampling event. Any deviations from this sampling plan will be noted in the final report.

**ATTACHMENT A**

**SITE MAP**

100014





AREA  
83,975.27 SQ. FT.  
1.9278 ACRES



Roy F. Weston, Inc.  
FEDERAL PROGRAMS DIVISION

EPA PM  
I. Huhn

FIGURE 1  
Site Map

IN ASSOCIATION WITH RESOURCE APPLICATION Inc.  
C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES,  
PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.

START PM  
G. Fowler

SITE  
Pyridium Mercury Disposal

**ATTACHMENT B**

**SAMPLING EQUIPMENT DECONTAMINATION EPA/ERT SOP #2006**

**100016**

# 1.0 SAMPLING EQUIPMENT DECONTAMINATION: SOP #2006

## 1.1 SCOPE AND APPLICATION

This Standard Operating Procedure (SOP) describes methods used for preventing or reducing cross-contamination, and provides general guidelines for sampling equipment decontamination procedures at a hazardous waste site. Preventing or minimizing cross-contamination in sampled media and in samples is important for preventing the introduction of error into sampling results and for protecting the health and safety of site personnel.

Removing or neutralizing contaminants that have accumulated on sampling equipment ensures protection of personnel from permeating substances, reduces or eliminates transfer of contaminants to clean areas, prevents the mixing of incompatible substances, and minimizes the likelihood of sample cross-contamination.

## 1.2 METHOD SUMMARY

Contaminants can be physically removed from equipment, or deactivated by sterilization or disinfection. Gross contamination of equipment requires physical decontamination, including abrasive and non-abrasive methods. These include the use of brushes, air and wet blasting, and high-pressure water cleaning, followed by a wash/rinse process using appropriate cleaning solutions. Use of a solvent rinse is required when organic contamination is present.

## 1.3 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

This section is not applicable to this SOP.

## 1.4 INTERFERENCES AND POTENTIAL PROBLEMS

- The use of distilled/deionized water commonly available from commercial vendors may be acceptable for decontamination of sampling equipment

provided that it has been verified by laboratory analysis to be analyte free.

- An untreated potable water supply is not an acceptable substitute for tap water. Tap water may be used from any municipal water treatment system for mixing of decontamination solutions.
- Acids and solvents utilized in the decontamination sequence pose the health and safety risks of inhalation or skin contact, and raise shipping concerns of permeation or degradation.
- The site work plan must address disposal of the spent decontamination solutions.
- Several procedures can be established to minimize contact with waste and the potential for contamination. For example:

- Stress work practices that minimize contact with hazardous substances.
- Use remote sampling, handling, and container-opening techniques when appropriate.
- Cover monitoring and sampling equipment with protective material to minimize contamination.
- Use disposable outer garments and disposable sampling equipment when appropriate.

## 1.5 EQUIPMENT/APPARATUS

- appropriate personal protective clothing
- non-phosphate detergent
- selected solvents
- long-handled brushes
- drop cloths/plastic sheeting
- trash container
- paper towels
- galvanized tubs or buckets
- tap water

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- distilled/deionized water
- metal/plastic containers for storage and disposal of contaminated wash solutions
- pressurized sprayers for tap and deionized/distilled water
- sprayers for solvents
- trash bags
- aluminum foil
- safety glasses or splash shield
- emergency eyewash bottle

## 1.6 REAGENTS

There are no reagents used in this procedure aside from the actual decontamination solutions and solvents. In general, the following solvents are utilized for decontamination purposes:

- 10% nitric acid<sup>(1)</sup>
- acetone (pesticide grade)<sup>(2)</sup>
- hexane (pesticide grade)<sup>(2)</sup>
- methanol

<sup>(1)</sup> Only if sample is to be analyzed for trace metals.

<sup>(2)</sup> Only if sample is to be analyzed for organics.

## 1.7 PROCEDURES

As part of the health and safety plan, develop and set up a decontamination plan before any personnel or equipment enter the areas of potential exposure. The equipment decontamination plan should include:

- the number, location, and layout of decontamination stations
- which decontamination apparatus is needed
- the appropriate decontamination methods
- methods for disposal of contaminated clothing, apparatus, and solutions

### 1.7.1 Decontamination Methods

All personnel, samples, and equipment leaving the contaminated area of a site must be decontaminated. Various decontamination methods will either physically remove contaminants, inactivate contaminants by disinfection or sterilization, or do both.

In many cases, gross contamination can be removed by physical means. The physical decontamination techniques appropriate for equipment decontamination can be grouped into two categories: abrasive methods and non-abrasive methods.

### *Abrasive Cleaning Methods*

Abrasive cleaning methods work by rubbing and wearing away the top layer of the surface containing the contaminant. The following abrasive methods are available:

- **Mechanical:** Mechanical cleaning methods use brushes of metal or nylon. The amount and type of contaminants removed will vary with the hardness of bristles, length of brushing time, and degree of brush contact.
- **Air Blasting:** Air blasting is used for cleaning large equipment, such as bulldozers, drilling rigs or auger bits. The equipment used in air blast cleaning employs compressed air to force abrasive material through a nozzle at high velocities. The distance between the nozzle and the surface cleaned, as well as the pressure of air, the time of application, and the angle at which the abrasive strikes the surface, determines cleaning efficiency. Air blasting has several disadvantages: it is unable to control the amount of material removed, it can aerate contaminants, and it generates large amounts of waste.
- **Wet Blasting:** Wet blast cleaning, also used to clean large equipment, involves use of a suspended fine abrasive delivered by compressed air to the contaminated area. The amount of materials removed can be carefully controlled by using very fine abrasives. This method generates a large amount of waste.

### *Non-Abrasive Cleaning Methods*

Non-abrasive cleaning methods work by forcing the contaminant off of a surface with pressure. In general, less of the equipment surface is removed using non-abrasive methods. The following non-abrasive methods are available:

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- **High-Pressure Water:** This method consists of a high-pressure pump, an operator-controlled directional nozzle, and a high pressure hose. Operating pressure usually ranges from 340 to 680 atmospheres (atm) which relates to flow rates of 20 to 140 liters per minute.
- **Ultra-High-Pressure Water:** This system produces a pressurized water jet (from 1,000 to 4,000 atm). The ultra-high-pressure spray removes tightly-adhered surface film. The water velocity ranges from 500 m/sec (1,000 atm) to 900 m/sec (4,000 atm). Additives can enhance the method. This method is not applicable for hand-held sampling equipment.

### Disinfection/Rinse Methods

- **Disinfection:** Disinfectants are a practical means of inactivating infectious agents.
- **Sterilization:** Standard sterilization methods involve heating the equipment. Sterilization is impractical for large equipment.
- **Rinsing:** Rinsing removes contaminants through dilution, physical attraction, and solubilization.

### 1.7.2 Field Sampling Equipment Cleaning Procedures

Solvent rinses are not necessarily required when organics are not a contaminant of concern and may be eliminated from the sequence specified below. Similarly, an acid rinse is not required if analysis does not include inorganics.

1. Where applicable, follow physical removal procedures specified in section 1.7.1.
2. Wash equipment with a non-phosphate detergent solution.
3. Rinse with tap water.
4. Rinse with distilled/deionized water.
5. Rinse with 10% nitric acid if the sample will be analyzed for trace ~~organics~~  
Inorganics

6. Rinse with distilled/deionized water.
7. Use a solvent rinse (pesticide grade) if the sample will be analyzed for organics.
8. Air dry the equipment completely.
9. Rinse again with distilled/deionized water.

Selection of the solvent for use in the decontamination process is based on the contaminants present at the site. Use of a solvent is required when organic contamination is present on-site. Typical solvents used for removal of organic contaminants include acetone, hexane, or water. An acid rinse step is required if metals are present on-site. If a particular contaminant fraction is not present at the site, the nine-step decontamination procedure listed above may be modified for site specificity. The decontamination solvent used should not be among the contaminants of concern at the site.

Table 1 lists solvent rinses which may be required for elimination of particular chemicals. After each solvent rinse, the equipment should be air dried and rinsed with distilled/deionized water.

Sampling equipment that requires the use of plastic tubing should be disassembled and the tubing replaced with clean tubing, before commencement of sampling and between sampling locations.

## 1.8 CALCULATIONS

This section is not applicable to this SOP.

## 1.9 QUALITY ASSURANCE/ QUALITY CONTROL

One type of quality control sample specific to the field decontamination process is the rinsate blank. The rinsate blank provides information on the effectiveness of the decontamination process employed in the field. When used in conjunction with field blanks and trip blanks, a rinsate blank can detect contamination during sample handling, storage and sample transportation to the laboratory.

\* Typo at time of printing.

Table 1: Recommended Solvent Rinse for Soluble Contaminants

SOLVENT	SOLUBLE CONTAMINANTS
Water	<ul style="list-style-type: none"> <li>• Low-chain hydrocarbons</li> <li>• Inorganic compounds</li> <li>• Salts</li> <li>• Some organic acids and other polar compounds</li> </ul>
Dilute Acids	<ul style="list-style-type: none"> <li>• Basic (caustic) compounds</li> <li>• Amines</li> <li>• Hydrazines</li> </ul>
Dilute Bases -- for example, detergent and soap	<ul style="list-style-type: none"> <li>• Metals</li> <li>• Acidic compounds</li> <li>• Phenol</li> <li>• Thiols</li> <li>• Some nitro and sulfonic compounds</li> </ul>
Organic Solvents <sup>(1)</sup> - for example, alcohols, ethers, ketones, aromatics, straight-chain alkanes (e.g., hexane), and common petroleum products (e.g., fuel, oil, kerosene)	<ul style="list-style-type: none"> <li>• Nonpolar compounds (e.g., some organic compounds)</li> </ul>

<sup>(1)</sup> - WARNING: Some organic solvents can permeate and/or degrade protective clothing.

A rinsate blank consists of a sample of analyte-free (i.e., deionized) water which is passed over and through a field decontaminated sampling device and placed in a clean sample container.

Rinsate blanks should be run for all parameters of interest at a rate of 1 per 20 for each parameter, even if samples are not shipped that day. Rinsate blanks are not required if dedicated sampling equipment is used.

## 1.10 DATA VALIDATION

This section is not applicable to this SOP.

## 1.11 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, OSHA and specific health and safety procedures.

Decontamination can pose hazards under certain circumstances even though performed to protect

health and safety. Hazardous substances may be incompatible with decontamination methods. For example, the decontamination solution or solvent may react with contaminants to produce heat, explosion, or toxic products. Decontamination methods may be incompatible with clothing or equipment; some solvents can permeate or degrade protective clothing. Also, decontamination solutions and solvents may pose a direct health hazard to workers through inhalation or skin contact, or if they combust.

The decontamination solutions and solvents must be determined to be compatible before use. Any method that permeates, degrades, or damages personal protective equipment should not be used. If decontamination methods pose a direct health hazard, measures should be taken to protect personnel or the methods should be modified to eliminate the hazard.

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**ATTACHMENT C**  
**SOIL SAMPLING EPA/ERT SOP #2012**

**100021**

## 2.0 SOIL SAMPLING: SOP #2012

### 2.1 SCOPE AND APPLICATION

The purpose of this Standard Operating Procedure (SOP) is to describe the procedures for collecting representative soil samples. Analysis of soil samples may determine whether concentrations of specific soil pollutants exceed established action levels, or if the concentrations of soil pollutants present a risk to public health, welfare, or the environment.

### 2.2 METHOD SUMMARY

Soil samples may be collected using a variety of methods and equipment. The methods and equipment used are dependent on the depth of the desired sample, the type of sample required (disturbed versus undisturbed), and the type of soil. Near-surface soils may be easily sampled using a spade, trowel, and scoop. Sampling at greater depths may be performed using a hand auger, a trier, a split-spoon, or, if required, a backhoe.

### 2.3 SAMPLE PRESERVATION, CONTAINERS, HANDLING, AND STORAGE

Chemical preservation of solids is not generally recommended. Refrigeration to 4°C, supplemented by a minimal holding time, is usually the best approach.

### 2.4 INTERFERENCES AND POTENTIAL PROBLEMS

There are two primary interferences or potential problems associated with soil sampling. These include cross-contamination of samples and improper sample collection. Cross-contamination problems can be eliminated or minimized through the use of dedicated sampling equipment. If this is not possible or practical, then decontamination of sampling equipment is necessary. Improper sample collection can involve using contaminated equipment, disturbance of the matrix resulting in compaction of the sample, or inadequate homogenization of the samples where required,

### 2.5 EQUIPMENT/APPARATUS

- sampling plan
- maps/plot plan
- safety equipment, as specified in the health and safety plan
- compass
- tape measure
- survey stakes or flags
- camera and film
- stainless steel, plastic, or other appropriate homogenization bucket or bowl
- 1-quart mason jars w/Teflon liners
- Ziploc plastic bags
- logbook
- labels
- chain of custody forms and seals
- field data sheets
- cooler(s)
- ice
- decontamination supplies/equipment
- canvas or plastic sheet
- spade or shovel
- spatula
- scoop
- plastic or stainless steel spoons
- trowel
- continuous flight (screw) auger
- bucket auger
- post hole auger
- extension rods
- T-handle
- sampling trier
- thin-wall tube sampler
- Vehmeyer soil sampler outfit
  - tubes
  - points
  - drive head
  - drop hammer
  - puller jack and grip
- backhoe

### 2.6 REAGENTS

Reagents are not used for the preservation of soil samples. Decontamination solutions are specified in



## 2.7 PROCEDURES

### 2.7.1 Preparation

1. Determine the extent of the sampling effort, the sampling methods to be employed, and which equipment and supplies are required.
2. Obtain necessary sampling and monitoring equipment.
3. Decontaminate or pre-clean equipment, and ensure that it is in working order.
4. Prepare schedules, and coordinate with staff, client, and regulatory agencies, if appropriate.
5. Perform a general site survey prior to site entry in accordance with the site-specific health and safety plan.
6. Use stakes, buoys, or flagging to identify and mark all sampling locations. Consider specific site factors, including extent and nature of contaminant, when selecting sample location. If required, the proposed locations may be adjusted based on site access, property boundaries, and surface obstructions. All staked locations will be utility-cleared by the property owner prior to soil sampling.

### 2.7.2 Sample Collection

#### *Surface Soil Samples*

Collect samples from near-surface soil with tools such as spades, shovels, and scoops. Surface material can be removed to the required depth with this equipment, then a stainless steel or plastic scoop can be used to collect the sample.

This method can be used in most soil types but is limited to sampling near surface areas. Accurate, representative samples can be collected with this procedure depending on the care and precision demonstrated by the sampling team member. The use of a flat, pointed mason trowel to cut a block of the desired soil can be helpful when undisturbed profiles are required. A stainless steel scoop, lab spoon, or plastic spoon will suffice in most other

applications. Avoid the use of devices plated with chrome or other materials. Plating is particularly common with garden implements such as potting trowels.

Follow these procedures to collect surface soil samples.

1. Carefully remove the top layer of soil or debris to the desired sample depth with a pre-cleaned spade.
2. Using a pre-cleaned, stainless steel scoop, plastic spoon, or trowel, remove and discard a thin layer of soil from the area which came in contact with the spade.
3. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled container(s) and secure the cap(s) tightly.

#### *Sampling at Depth with Augers and Thin-Wall Tube Samplers*

This system consists of an auger, a series of extensions, a "T" handle, and a thin-wall tube sampler (Appendix A, Figure 1). The auger is used to bore a hole to a desired sampling depth, and is then withdrawn. The sample may be collected directly from the auger. If a core sample is to be collected, the auger tip is then replaced with a thin-wall tube sampler. The system is then lowered down the borehole, and driven into the soil at the completion depth. The system is withdrawn and the core collected from the thin-wall tube sampler.

Several types of augers are available. These include: bucket, continuous flight (screw), and posthole augers. Bucket augers are better for direct

sample recovery since they provide a large volume of sample in a short time. When continuous flight augers are used, the sample can be collected directly from the flights, which are usually at 5-foot intervals. The continuous flight augers are satisfactory for use when a composite of the complete soil column is desired. Posthole augers have limited utility for sample collection as they are designed to cut through fibrous, rooted, swampy soil.

Follow these procedures for collecting soil samples with the auger and a thin-wall tube sampler.

1. Attach the auger bit to a drill rod extension, and attach the "T" handle to the drill rod.
2. Clear the area to be sampled of any surface debris (e.g., twigs, rocks, litter). It may be advisable to remove the first 3 to 6 inches of surface soil for an area approximately 6 inches in radius around the drilling location.
3. Begin augering, periodically removing and depositing accumulated soils onto a plastic sheet spread near the hole. This prevents accidental brushing of loose material back down the borehole when removing the auger or adding drill rods. It also facilitates refilling the hole, and avoids possible contamination of the surrounding area.
4. After reaching the desired depth, slowly and carefully remove the auger from boring. When sampling directly from the auger, collect sample after the auger is removed from boring and proceed to Step 10.
5. Remove auger tip from drill rods and replace with a pre-cleaned thin-wall tube sampler. Install proper cutting tip.
6. Carefully lower the tube sampler down the borehole. Gradually force the tube sampler into the soil. Care should be taken to avoid scraping the borehole sides. Avoid hammering the drill rods to facilitate coring as the vibrations may cause the boring walls to collapse.
7. Remove the tube sampler, and unscrew the drill rods.
8. Remove the cutting tip and the core from the device.

9. Discard the top of the core (approximately 1 inch), as this represents material collected before penetration of the layer of concern. Place the remaining core into the appropriate labeled sample container(s). Sample homogenization is not required.
10. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into the appropriate, labeled container(s) and secure the cap(s) tightly.
11. If another sample is to be collected in the same hole, but at a greater depth, reattach the auger bit to the drill and assembly, and follow steps 3 through 11, making sure to decontaminate the auger and tube sampler between samples.
12. Abandon the hole according to applicable state regulations. Generally, shallow holes can simply be backfilled with the removed soil material.

### *Sampling at Depth with a Trier*

The system consists of a trier, and a "T" handle. The auger is driven into the soil to be sampled and used to extract a core sample from the appropriate depth.

Follow these procedures to collect soil samples with a sampling trier.

1. Insert the trier (Appendix A, Figure 2) into the material to be sampled at a 0° to 45° angle from horizontal. This orientation minimizes the spillage of sample.
2. Rotate the trier once or twice to cut a core of material.

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3. Slowly withdraw the trier, making sure that the slot is facing upward.
4. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly.

### *Sampling at Depth with a Split Spoon (Barrel) Sampler*

The procedure for split spoon sampling describes the collection and extraction of undisturbed soil cores of 18 or 24 inches in length. A series of consecutive cores may be extracted with a split spoon sampler to give a complete soil column profile, or an auger may be used to drill down to the desired depth for sampling. The split spoon is then driven to its sampling depth through the bottom of the augured hole and the core extracted.

When split tube sampling is performed to gain geologic information, all work should be performed in accordance with ASTM D 1586-67 (reapproved 1974).

Follow these procedures for collecting soil samples with a split spoon.

1. Assemble the sampler by aligning both sides of the barrel and then screwing the bit onto the bottom and the heavier head piece onto the top.
2. Place the sampler in a perpendicular position on the sample material.
3. Using a sledge hammer or well ring, if available, drive the tube. Do not drive past the bottom of the head piece or compression of the

sample will result.

4. Record in the site logbook or on field data sheets the length of the tube used to penetrate the material being sampled, and the number of blows required to obtain this depth.
5. Withdraw the sampler, and open by unscrewing the bit and head and splitting the barrel. If a split sample is desired, a cleaned, stainless steel knife should be used to divide the tube contents in half, longitudinally. This sampler is typically available in diameters of 2 and 3 1/2 inches. However, in order to obtain the required sample volume, use of a larger barrel may be required.
6. Without disturbing the core, transfer it to an appropriate labeled sample container(s) and seal tightly.

### *Test Pit/Trench Excavation*

These relatively large excavations are used to remove sections of soil, when detailed examination of soil characteristics (horizontal structure, color, etc.) are required. It is the least cost effective sampling method due to the relatively high cost of backhoe operation.

Follow these procedures for collecting soil samples from test pit/trench excavations.

1. Prior to any excavation with a backhoe, it is important to ensure that all sampling locations are clear of utility lines and poles (subsurface as well as above surface).
2. Using the backhoe, dig a trench to approximately 3 feet in width and approximately 1 foot below the cleared sampling location. Place removed or excavated soils on plastic sheets. Trenches greater than 5 feet deep must be sloped or protected by a shoring system, as required by OSHA regulations.
3. Use a shovel to remove a 1- to 2-inch layer of soil from the vertical face of the pit where sampling is to be done.
4. Take samples using a trowel, scoop, or coring device at the desired intervals. Be sure to scrape the vertical face at the point of sampling

to remove any soil that may have fallen from above, and to expose fresh soil for sampling. In many instances, samples can be collected directly from the backhoe bucket.

5. If volatile organic analysis is to be performed, transfer a portion of the sample directly into an appropriate, labeled sample container(s) with a stainless steel lab spoon, plastic lab spoon, or equivalent and secure the cap(s) tightly. Place the remainder of the sample into a stainless steel, plastic, or other appropriate homogenization container, and mix thoroughly to obtain a homogenous sample representative of the entire sampling interval. Then, either place the sample into an appropriate, labeled container(s) and secure the cap(s) tightly; or, if composite samples are to be collected, place a sample from another sampling interval into the homogenization container and mix thoroughly. When compositing is complete, place the sample into appropriate, labeled container(s) and secure the cap(s) tightly.
6. Abandon the pit or excavation according to applicable state regulations. Generally, shallow excavations can simply be backfilled with the removed soil material.

## 2.8 CALCULATIONS

This section is not applicable to this SOP.

## 2.9 QUALITY ASSURANCE/ QUALITY CONTROL

There are no specific quality assurance activities which apply to the implementation of these procedures. However, the following QA procedures apply:

- All data must be documented on field data sheets or within site logbooks.
- All instrumentation must be operated in accordance with operating instructions as supplied by the manufacturer, unless otherwise specified in the work plan. Equipment checkout and calibration activities must occur prior to sampling/operation, and they must be documented.

## 2.10 DATA VALIDATION

This section is not applicable to this SOP.

## 2.11 HEALTH AND SAFETY

When working with potentially hazardous materials, follow U.S. EPA, OSHA, and specific health and safety procedures.

## SAMPLING TRIP REPORT

**SITE NAME:** Pyridium Mercury Disposal Site  
TDD #: 02-97-11-0004  
DCN #: START-02-F-01489

**SAMPLING DATE:** November 13, 1997

1. **Site Location:** Harriman, Orange County, New York, Figure 1.
2. **Sample Location:** Refer to Figure 2.
3. **Sample Descriptions:** Twelve surface and four subsurface soil samples were collected along the perimeter of the Site, refer to Table 1.
4. **Laboratory Receiving Samples:**

### Sample Type

Total mercury

### Name and Address of Laboratory

NY Test Environmental  
60 Seaview Boulevard  
Port Washington, NY 11050

### 5. Sample Dispatch Data:

On 13 November 1997, at 1540 hours, a total of sixteen soil samples were relinquished on site to the NY Test Environmental courier by the Region II Superfund Technical Assessment and Response Team (START).

#### On-Site Personnel:

<u>Name</u>	<u>Company</u>	<u>Duties on Site</u>
Gene P. Fowler	Region II START	Project Manager and sampler;
Ilene Presworksy	Region II START	Sampler and sample documentation;
Mike Mahnkopf	Region II START	Sampler and QA/QC; and
Irmee Huhn	U.S. EPA	On-Scene Coordinator.

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6. Additional Comments:

Weather: cloudy, wind 2-5 miles per hour, and a temperature of 33 °F.

On November 13, 1997, START collected four subsurface and twelve surface soil samples for total mercury analysis. The water table was encountered at four feet below grade at location PM-004 and no sample was collected. Surface soil sample locations PM-006, 008, 010, 011, 013, 014, 016, and 017 were additionally augered to depths ranging from 6 inches (auger refusal) to 5 feet below grade, to observe the extent of the white clay-like contamination, if any. The observed white clay-like waste material was identified off site on residential property at a one inch depth adjacent to the tree (Figure 2) and opposite sample PM-010 and the three foot high wooden fence. Attachment B contains the Soil Sampling Data sheets with descriptions of the observation borings.

START used dedicated scoops and spatulas to collect the surface soil samples and non-dedicated stainless steel augers and dedicated scoops and spatulas to obtain the subsurface soil samples. The stainless steel augers were decontaminated between sample locations.

The Sampling QA/QC Work Plan (DCN No. 01479) specified that 45 samples would be collected. However, only 16 samples were actually collected as directed by the On-Scene Coordinator, Irmee Huhn, due to the uncertainty of the property boundary. Soil samples were to be collected every thirty feet along the perimeter of the site. The sample collection was changed to one sample every forty feet. Thick vegetation (Figure 2) inhibited access along the perimeter that further reduced the sample collection from forty-five to sixteen.

The preliminary sample data were received from the laboratory on November 17, and are included in Table 1.

7. Report Prepared by: Gene P. Fowler

Date:

Gene P. Fowler

12-26-97

8. Report Reviewed by: Thomas O'Neill

Date:

Thomas O'Neill

12/26/97

**TABLE 1:**  
**PYRIDIUM MERCURY SITE No. 1**  
**SOIL SAMPLE IDENTIFICATION AND**  
**MERCURY RESULTS**

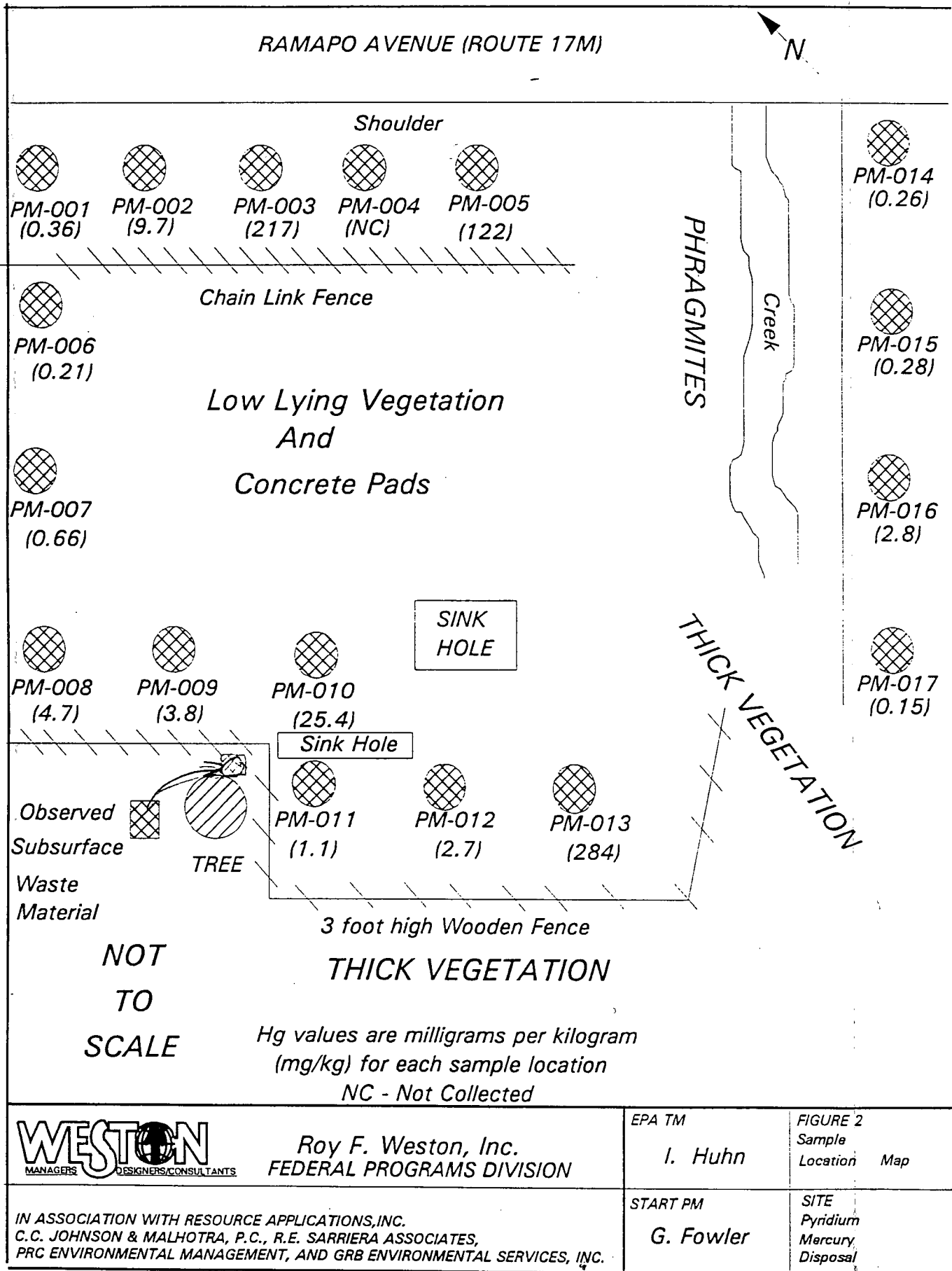
SAMPLE No.	DEPTH	DATE/ TIME	Hg RESULT (mg/kg)	SOIL DESCRIPTION	LOCATION
PM-001	18-24 in.	11/13/97/ 0830	0.36	Dark brown silty clay	Northwest corner of the existing 150 foot chain link fence post (zero feet) at the northeast corner of the transmission shop building.
PM-002	6-12 in.	11/13/97/ 0900	9.70	Dark brown silty clay	Along the existing 150 foot chain link fence; 40 feet from PM-001, the northwest corner of the existing chain link fence post.
PM-003	9-15 in.	11/13/97/ 0910	217.00	Dark brown silty clay	Along the existing 150 foot chain link fence; 80 feet from PM-001, the northwest corner of the existing chain link fence post.
PM-004	N/C	N/C	N/C	Dark brown silty clay	Along the existing 150 foot chain link fence; 120 feet from PM-001, the northwest corner of the existing chain link fence post. No sample collected due to the extent of the clay-like white material from 6 inches to 5 feet. The water table was encountered at 4 feet.
PM-005	14.4 - 20.4 in.	11/13/97/ 0945	122.00	Dark brown silty clay	Along the existing 150 foot chain link fence; 150 feet from PM-001, the northwest corner of the existing chain link fence post.
PM-006	0-6 in.	11/13/97/ 1020	0.21	Brown silty clay	40 feet southwest from PM-001; along the transmission shop building.
PM-007	0-6 in.	11/13/97/ 1027	0.66	Brown silty clay	70 feet southwest from PM-001; along the transmission shop building.
PM-008	0-6 in.	11/13/97/ 1032	4.70	Brown silty clay	96 feet southwest from PM-001; along the transmission shop building.
PM-009	0-6 in.	11/13/97/ 1040	3.80	Brown silty clay	40 feet east from PM-008 along the 3 foot high (3'h) wooden fence; southwest side of the site.
PM-010	0-6 in.	11/13/97/ 1045	25.40	Brown silty clay	80 feet east from PM-008 along the 3'h wooden fence; southwest side of the site.
PM-011	0-6 in.	11/13/97/ 1044	1.10	Brown silty clay	40 feet south from PM-010 along the wooden fence; southwest side of the site.
PM-012	0-6 in.	11/13/97/ 1050	2.70	Brown silty clay	40 feet east from PM-011 along the 3'h wooden fence; southwest side of the site.
PM-013	0-6 in.	11/13/97/ 1055	284.00	Brown silty clay	80 feet east from PM-011 along the 3'h wooden fence; southwest side of the site.

SAMPLE No.	DEPTH	DATE/TIME	Hg RESULT (mg/kg)	SOIL DESCRIPTION	LOCATION
PM-014	0-6 in.	11/13/97/ 1109	0.26	Brown silty clay	Along residential property and phragmites; 30 feet from the center line of Ramapo Avenue (Route 17M); east end of the site and 10 feet from the edge of the road.
PM-015	0-6 in.	11/13/97/ 1125	0.28	Brown silty clay	Along residential property and phragmites; 70 feet from the center line of Ramapo Avenue (Route 17M); east end of the site and 40 feet from the edge of the road.
PM-016	0-6 in.	11/13/97/ 1120	2.80	Brown silty clay	Along residential property and phragmites; 104 feet from the center line of Ramapo Avenue (Route 17M); east end of the site 80 feet from the edge of the road.
PM-017	0-6 in.	11/13/97/ 1115	0.15	Brown silty clay	Along residential property and phragmites; 146 feet from the center line of Ramapo Avenue (Route 17M); east end of the site and 120 feet from the edge of the road.

N/C - Not Collected

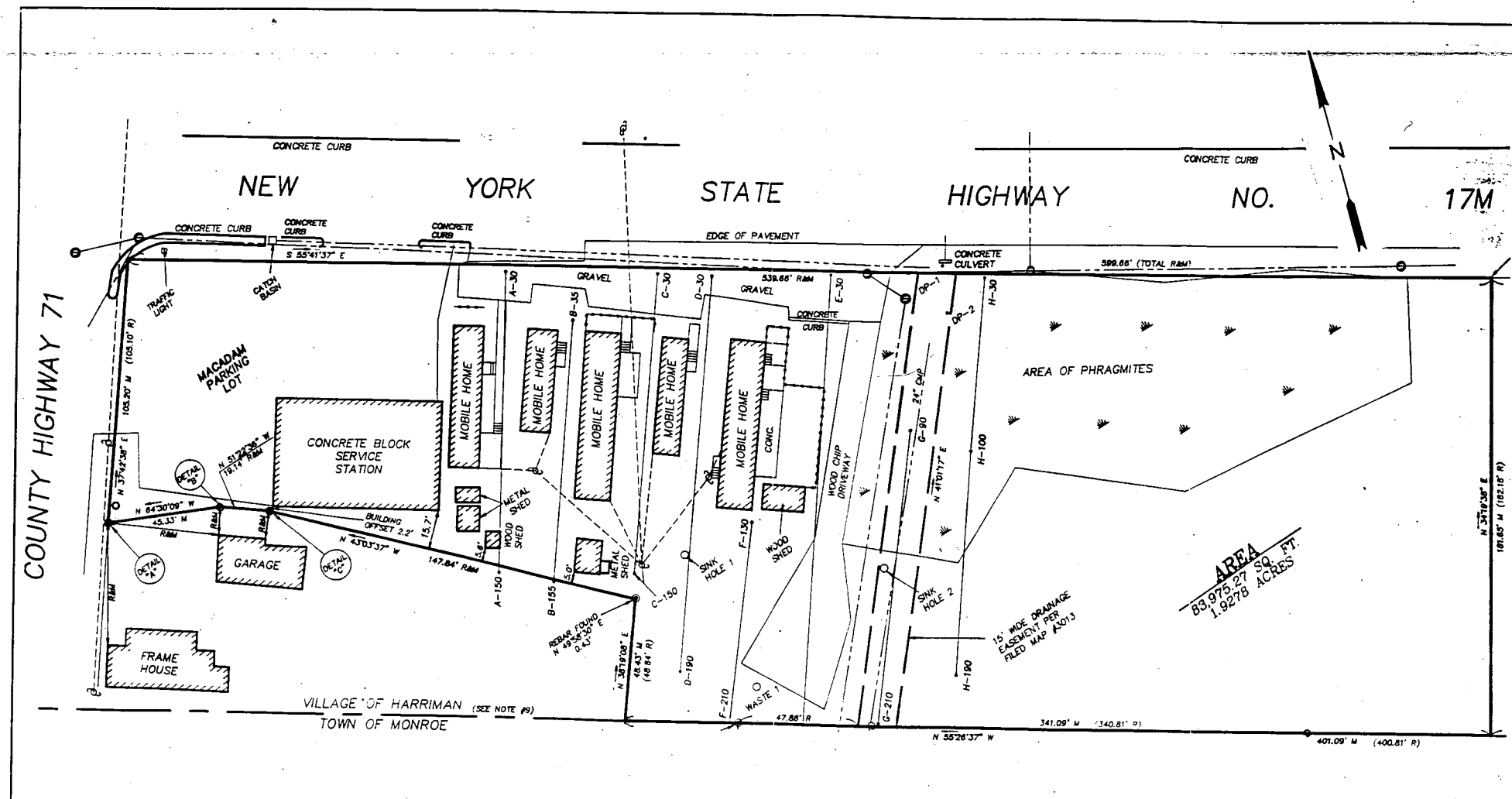
100030





100031

30002



Roy F. Weston, Inc.  
FEDERAL PROGRAMS DIVISION

EPA PM

I. Huhn

FIGURE 1

Site Map

IN ASSOCIATION WITH RESOURCE APPLICATION Inc.  
C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES,  
PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.

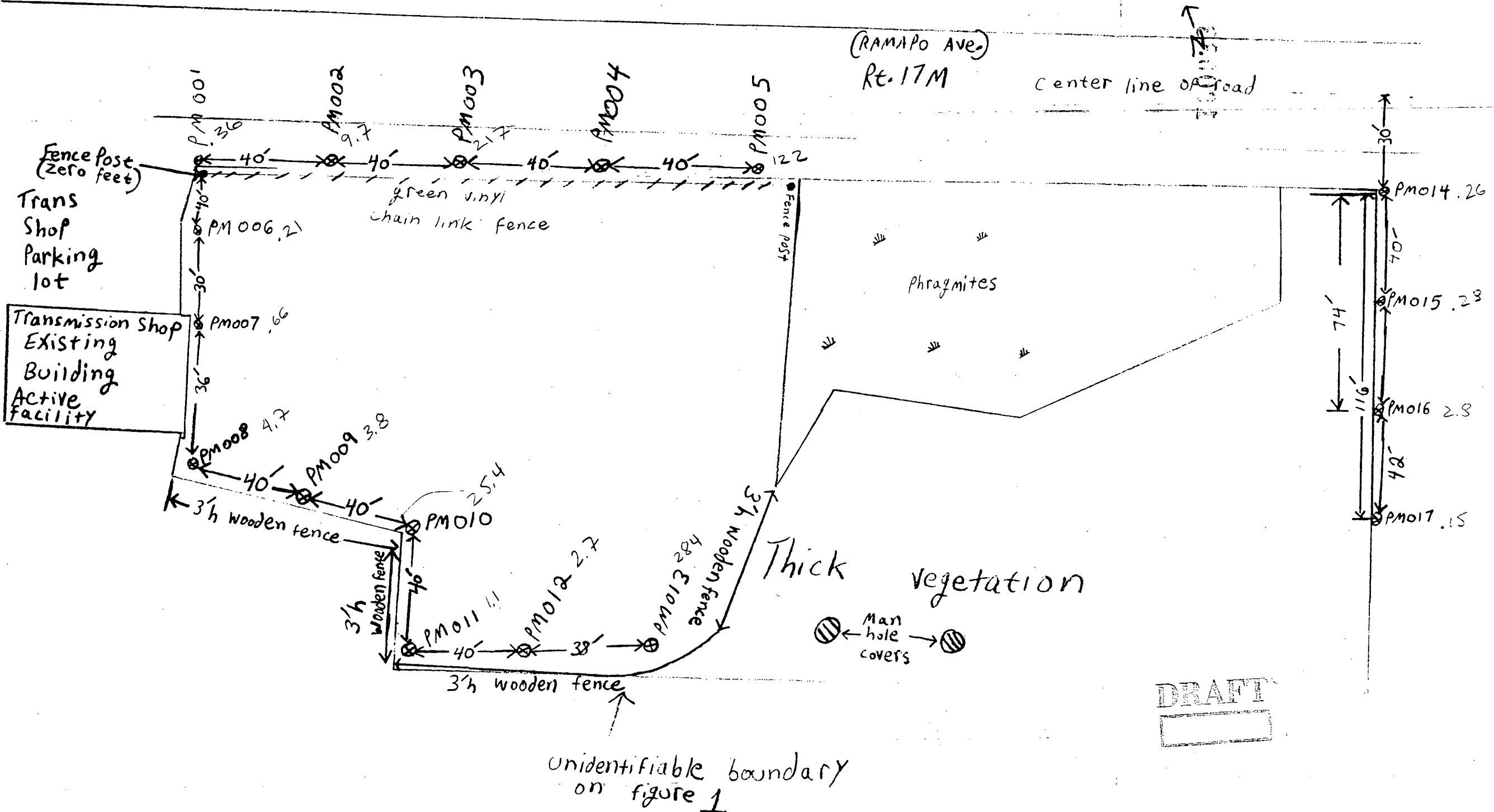
START PM

G. Fowler

SITE

Pyridium Mercury Disposal

# OVERLAY of figure 1



**ATTACHMENT A**  
**CHAIN OF CUSTODY**

**100034**

# CHAIN OF CUSTODY RECORD

P No.: 2239  
 I No.: 87354



SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
 EPA CONTRACT 68-W3-0019  
 Phone: 908-225-6116 Fax: 908-225-7037

- Matrix Box No.:
1. Surface Water
  2. Ground Water
  3. Leachate
  4. Rinse
  5. Soil/Sediment
  6. Oil
  7. Waste
  8. Other (Specify)

- Preservative Box No.:
1. HCl
  2. HNO3
  3. Na2SO4
  4. H2SO4
  5. Other (Specify)
  6. Ice Only
  7. Not Preserved
  8. See Comments

and verbal and written results to:

Roy F. Weston, Inc., USEPA Region II START  
 Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703  
 Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RAS ANALYSIS					RCRA ANALYSIS			OTHER	
						VOA	ENH	TEST	PCBs	TAL	CN	ENH	COR		REAC
M001	11/13/97/0830	5	L	G	6										Total Mercury
M002	11/13/97/0900														
M003	11/13/97/0910														
M004	11/13/97/														
M005	11/13/97/0945														
M006	11/13/97/1020														
M007	11/13/97/1027														
M008	11/13/97/1032														
M009	11/13/97/1040														
M010	11/13/97/1045														
M011	11/13/97/1044	✓	✓	✓	✓										✓

Comments:

Person Assuming Responsibility for Sample:

Gene P. Fowler *Gene P. Fowler*

Time 1515 Date 11/13/97

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	<i>Gene P. Fowler</i>	1530	11/13		Shipment to Lab
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental

100035

EP No.:

2239

D No.:

37354

## CHAIN OF CUSTODY RECORD



SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

EPA CONTRACT 68-W3-0019

Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:

1. Surface Water
2. Ground Water
3. Leachate
4. Rinseate
5. Soil/Sediment
6. Oil
7. Waste
8. Other (Specify)

Preservative Box No.:

1. HCl
2. HN03
3. Na2SO4
4. H2SO4
5. Other (Specify)
6. Ice Only
- N. Not Preserved
- \* See Comments

Send verbal and written results to:

Roy F. Weston, Inc., USEPA Region II START

Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703

Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Water box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Estor box #)	BAS ANALYSIS				RCRA ANALYSIS			OTHER	
						VOL	ENA	PEST	PCBs	TAL	CN	KIN		COR
PM012	11/13/97/1050	5	L	G	6									Total Mercury
PM013	11/13/97/1055	↓	↓	↓	↓									↓
PM014	11/13/97/1109	↓	↓	↓	↓									
PM015	11/13/97/1125	↓	↓	↓	↓									
PM016	11/13/97/1120	↓	↓	↓	↓									↓
PM017	11/13/97/1115	✓	✓	✓	✓									✓

Comments:

Person Assuming Responsibility for Sample:

Gene Fowler (Gene Fowler)

Time

Date (MM/DD/YY)

1515

11/13/97

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	Gene Fowler	1530	11/13		Shipment to Lab
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION



In Association with Resource Applications, Inc., R.E. Sarricra Associates, PRC Environmental

100036

**ATTACHMENT B**  
**SAMPLE DATA SHEETS**



**100037**

## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-001</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> 2 3 UNIT SYSTEM: <u>ENGLISH</u> METRIC SAMPLE ID: _____ TIME COLLECTED: <u>0830</u> SAMPLED INTERVAL: <u>18"</u> TO <u>24"</u> FT-M <u>BGS</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH  	SAMPLE DESCRIPTION MATERIAL: NATURAL - <u>FILL</u> UNCERTAIN APPEARANCE: SHN - OOR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - VEG - GVL - ASP - CMT - <u>FIL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>DARK BROWN</u> <u>7.5YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: <u>UNI</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - <u>ANG</u> - SUB - RND - NA SAND: <u>ANG</u> - SUB - RND - NA SORTING: WEL - MOD - <u>POB</u> - NA PLASTICITY: NON - <u>LCW</u> - MOD - HGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - BLT - <u>MOD</u> - WEL GRAIN TYPE: QTZ - <u>FRG</u> - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
SAMPLING INFORMATION		
SAMPLE TYPE: <u>DISCRETE</u> COMPOSITE OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSS - <u>STS</u> - CTS OTHER: <u>and auger</u> SAMPLER DECONTAMINATION: <u>DED</u> - LAB - <u>FLD</u> - OTH DESCRIBE OTHER: _____ PROCEDURE: <u>DET</u> - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: <u>nitric</u> QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
LAB TYPE CHM - RAD - GEO - OTH	LAB NAME <u>NY TEST Environmental Total Mercury</u> <u>60 Seaview Road</u> <u>P.O. Box 1050</u>	ANALYTICAL PARAMETERS <u>516) 625-5500</u>
SPLIT SAMPLES: NON - CWN - CVR - OTH ORGANIZATION NAME: REPRESENTATIVES NAME:		NOTES <u>Anne Lee</u> <u>John Gasperi</u>
COMMENTS: <u>Refusal at 24", Rock-cobble; silty clay soil</u> <u>Subsurface sample</u>		
DATA ENTRY BY: DATE ENTERED: CC REPORTS PRINTED? YES NO	QC REVIEW BY: REVIEW DATE: APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: REVIEW DATE: APPROVED WITH - WITHOUT REVISIONS




## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-002</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>																	
<b>SAMPLE IDENTIFICATION</b>																		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>0900</u> SAMPLED INTERVAL: <u>6"</u> TO <u>12"</u> FT- <u>1039</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____																	
<b>SITE SKETCH</b>	<b>SAMPLE DESCRIPTION</b>																	
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - NA - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRS - LVS - VEG - GVL - ASP - CMT - FIL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>DARK BROWN</u> <u>7.5YR</u> <u>MUN</u> - GSA WET - DRY COLORATION: <u>UNI</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - RND - NA SAND: ANG - SUB - RND - NA SORTING: WEL - MOD - POR - NA PLASTICITY: NON - (CW) - MOD - HGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - BLT - MOD - WEL GRAIN TYPE: QTZ - FRG - FOS - NA MATRIX: CAL - CXD - ARG - SIL - NA STRENGTH: NONCOHESIVE CNS - FRM - LSE COHESIVE STF - FRM - (STF) - HRD																	
	<b>SAMPLING INFORMATION</b> SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSB - STB - CTS OTHER: <u>auger</u> SAMPLER DECONTAMINATION: <u>DED</u> - LAB - <u>FLD</u> - OTH DESCRIBE OTHER: <u>NITRIC</u> PROCEDURE: <u>DET</u> - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: <u>NITRIC</u> QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____																	
	<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:20%;">LAB TYPE</th> <th style="width:30%;">LAB NAME</th> <th style="width:40%;">ANALYTICAL PARAMETERS</th> <th style="width:10%;">NOTES</th> </tr> </thead> <tbody> <tr> <td>CHM - RAD - GEO - OTH</td> <td><u>NY TEST Environmental</u></td> <td><u>Total Mercury</u></td> <td></td> </tr> <tr> <td>CHM - RAD - GEO - OTH</td> <td><u>60 Seaview Blvd</u></td> <td></td> <td><u>Anne Lee</u></td> </tr> <tr> <td>CHM - RAD - GEO - OTH</td> <td><u>Post Washington #1050</u></td> <td><u>516) 625-5500</u></td> <td><u>John Gasperi</u></td> </tr> </tbody> </table>		LAB TYPE	LAB NAME	ANALYTICAL PARAMETERS	NOTES	CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>		CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>		<u>Anne Lee</u>	CHM - RAD - GEO - OTH	<u>Post Washington #1050</u>	<u>516) 625-5500</u>	<u>John Gasperi</u>
	LAB TYPE	LAB NAME	ANALYTICAL PARAMETERS	NOTES														
	CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>															
	CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>		<u>Anne Lee</u>														
	CHM - RAD - GEO - OTH	<u>Post Washington #1050</u>	<u>516) 625-5500</u>	<u>John Gasperi</u>														
	SPLIT SAMPLES: NON - CWN - CVR - OTH _____ ORGANIZATION NAME: _____ REPRESENTATIVES NAME: _____ SPLIT SAMPLE ID NO.: _____ PARAMETERS: SAME OTHER: _____ CAQC SAMPLES: COL - SPL - ENS - TRP - LCS																	
	COMMENTS: <u>Refusal at 12"; Rock - cobble, silty clay soil</u> <u>Subsurface Sample</u>																	
	DATA ENTRY BY: _____ DATE ENTERED: _____ CC REPORTS PRINTED? YES NO																	
QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS																		
QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS																		

100039


## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u>	SAMPLE NO.: <u>PM-003</u>	
CLIENT: <u>U.S. EPA</u>	DATE: <u>11-13-97</u>	
PROJECT: <u>pyridium mercury</u>	SAMPLER: <u>G. Fowler</u>	
SITE: <u>Harriman, New York</u>	SIGNATURE: <u>G. Fowler</u>	

SAMPLE IDENTIFICATION		ESTIMATED	SURVEYED
QUALITY LEVEL: <u>1</u> - 2 - 3	SURFACE		
UNIT SYSTEM: <u>ENGLISH</u> - METRIC	ELEVATION:		
SAMPLE ID: _____	N. COORDINATE:		
TIME COLLECTED: <u>0910</u>	E. COORDINATE:		
SAMPLED INTERVAL: <u>0"</u> TO <u>15"</u> FT-M <u>B39</u>			

SITE SKETCH	SAMPLE DESCRIPTION
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN
	APPEARANCE: SHN - ODR - PRD - NA - OTHER: _____
	INSTRUMENT 1 TYPE: _____ READING: _____
	INSTRUMENT 2 TYPE: _____ READING: _____
	SURFACE LAYER: SOL - GRS - LVS - VEG - GVL - <u>ASP</u> - <u>CMT</u> - <u>FL</u>
	OTHER: _____
	THICKNESS (IN): _____ REMOVED SAMPLED
	SECONDARY TYPE: NA - BED - VEN - MIX
	OVERALL COLOR: <u>DARK BROWN</u>
	25% <u>MUN</u> - <u>GBA</u> WET - DRY
COLORATION: <u>UNI</u> - STN - MOT - VAR	
TEXTURE:	
GRAVEL: _____ %	_____ %
SAND: C - M - F _____ %	_____ %
SILT: _____ %	_____ %
CLAY: _____ %	_____ %
ORGANIC: _____ %	_____ %
ROUNDNESS:	
GRAVEL: FAC - STR - <u>ANG</u> - SUB - RND - NA	
SAND: <u>ANG</u> - SUB - RND - NA	
SORTING: WEL - MOD - <u>PO</u> - NA	
PLASTICITY: NON - <u>LCW</u> - MOD - HGH - NA	
MOISTURE: <u>DRY</u> - MST - WET - SAT	
CEMENTATION: NON - BLT - MOD - WEL	
GRAIN TYPE: GTZ - <u>FRG</u> - FOS - NA	
MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA	
STRENGTH:	
NONCOHESIVE DNS - FRM - LSE	
COHESIVE STF - FRM - SFT - PRO	

LAB TYPE	LAB NAME	ANALYTICAL PARAMETERS	NOTES
CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>	
CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>		<u>Anne Lee</u>
CHM - RAD - GEO - OTH	<u>Port Washington Blvd 50</u>	<u>516) 625-5500</u>	<u>John Gasperi</u>

SPLIT SAMPLES: NON - CWN - CVR - OTH _____	SPLIT SAMPLE ID NO. _____
ORGANIZATION NAME: _____	PARAMETERS: SAME OTHER: _____
REPRESENTATIVES NAME: _____	QA/QC SAMPLES: COL - SPL - RNS - TRP - LCS



  

COMMENTS: <u>Refusal at 15" - at 12" depth a 1" layer of white clay like material was encountered; silty clay soil</u>	
<u>Subsurface Sample</u>	



DATA ENTRY BY: _____	QC REVIEW BY: _____	QA REVIEW BY: _____
DATE ENTERED: _____	REVIEW DATE: _____	REVIEW DATE: _____
QC REPORTS PRINTED? YES NO	APPROVED WITH - WITHOUT REVISIONS	APPROVED WITH - WITHOUT REVISIONS

## GEOLIS Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-004</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> 2 3 UNIT SYSTEM: <u>ENGLISH</u> METRIC SAMPLE ID: _____ TIME COLLECTED: <u>No Sample collected</u> SAMPLED INTERVAL: _____ TO _____ FT-M <u>BGS</u>	SURFACE _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH  	SAMPLE DESCRIPTION MATERIAL: NATURAL <u>FILL</u> UNCERTAIN APPEARANCE: SHN - ODR - PRD - NA - OTHER: <u>white material</u> INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - VEG - GVL - ASP - CMT <u>FL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Dark Brown</u> <u>2.5YR</u> <u>MUN</u> GSA WET - DRY COLORATION: <u>UNI</u> STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - <u>ANG</u> - SUB - RND - NA SAND: <u>ANG</u> - SUB - RND - NA SORTING: WEL - MOD - <u>FOR</u> - NA PLASTICITY: <u>NON</u> - <u>LOW</u> - MOD - HGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - SLT - <u>MOD</u> - WEL GRAIN TYPE: QTZ - FRG - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE CNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
SAMPLING INFORMATION		
SAMPLE TYPE: <u>DISCRETE</u> COMPOSITE OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSB - STB - CTS OTHER: <u>auger</u> SAMPLER DECONTAMINATION: <u>DED</u> LAB <u>FLD</u> OTH DESCRIBE OTHER: _____ PROCEDURE: <u>DET</u> - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: <u>NITRIC</u> QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
LAB TYPE CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH	LAB NAME <u>NY TEST Environmental</u> <u>60 Seaview Road</u> <u>P.O. Box 1050</u>	ANALYTICAL PARAMETERS <u>Total Mercury</u> <u>516) 625-5500</u>
NOTES <u>Anne Lee</u> <u>John Gasperi</u>		
SPLIT SAMPLES: NON - CWN - CVR - OTH ORGANIZATION NAME: _____ REPRESENTATIVES NAME: _____ SPLIT SAMPLE ID NO.: _____ PARAMETERS: SAME OTHER: _____ QA/QC SAMPLES: COL - SPL - RNS - TRP - LCS		
COMMENTS: <u>0-6" surface Dark Brown silty clay soil; 6" to 5' of white clay like material. No sample collected due to the extent of the clay-like material from 6 inches to 5 feet. The water table was encountered at 5 feet.</u>		
DATA ENTRY BY: _____ DATE ENTERED: _____ QC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS: _____	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS: _____



100041

## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-005</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>0945</u> SAMPLED INTERVAL: <u>1.25</u> TO <u>1.75</u> FT-M (BGS)	SURFACE _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH	SAMPLE DESCRIPTION	
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - VEG - GVL - ASP - CMY - <u>FL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Dark Brown</u> <u>7.5YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: <u>UNI</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - <u>ANG</u> - SUB - RND - NA SAND: ANG - SUB - RND - NA SORTING: WEL - MOD - <u>POR</u> - NA PLASTICITY: NON - <u>LCW</u> - MOD - HGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - BLT - MOD - WEL GRAIN TYPE: QTZ - <u>FRG</u> - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
	SECONDARY	
SAMPLING INFORMATION		
SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - BPT - BLP - BUC - SSB - <u>STB</u> - CTS OTHER: <u>auger</u> SAMPLER DECONTAMINATION: <u>W</u> - <u>DED</u> - LAB - <u>FLD</u> - OTH DESCRIBE OTHER: _____ PROCEDURE: <u>DET</u> - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: <u>nitric</u> QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
LAB TYPE	LAB NAME	ANALYTICAL PARAMETERS
CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>
CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>	<u>Anne Lee</u>
CHM - RAD - GEO - OTH	<u>Port Washington (H1050)</u>	<u>John Gasperi</u>
SPLIT SAMPLES: NON - CWN - OVR - OTH		
SPLIT SAMPLE ID NO.: _____		
ORGANIZATION NAME: _____		
PARAMETERS: SAME OTHER: _____		
REPRESENTATIVES NAME: _____		
QA/QC SAMPLES: COL - SPL - RNS - TRP - LCS		
COMMENTS: <u>No white clay material observed; silty clay soil</u> <u>Subsurface sample</u>		
DATA ENTRY BY: _____ DATE ENTERED: _____ QC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS



100042

GEOLIS<sub>®</sub> Soil Sampling Form

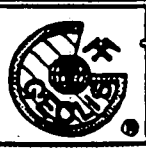

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium Mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-006</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>																	
<b>SAMPLE IDENTIFICATION</b>																		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1020</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>B38</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____																	
<b>SITE SKETCH</b>	<b>SAMPLE DESCRIPTION</b>																	
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRO - NA - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GFS - LVS - VEG - GVL - ASP - CMT - <u>FL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>7.5YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: <u>UNI</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - <u>MOD</u> - POR - NA PLASTICITY: NON - LCW - <u>MOD</u> - HGH - NA MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: NON - BLT - <u>MOD</u> - WEL GRAIN TYPE: QTZ - <u>FRG</u> - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE CNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD																	
	<b>SAMPLING INFORMATION</b> SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - B38 - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - PEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: <u>NR</u> RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____																	
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	LAB TYPE	LAB NAME	ANALYTICAL PARAMETERS	NOTES														
	CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>															
	CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>		<u>Anne Lee</u>														
	CHM - RAD - GEO - OTH	<u>Port Washington, NY 10501</u>	<u>516) 625-5500</u>	<u>John Gasperi</u>														
	SPLIT SAMPLES: NON - OWN - CVR - OTH: _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ QA/QC SAMPLES: COL - SPL - RNS - TRP - LCS																	
	COMMENTS: <u>Refusal 15"-16" - Rock-Pebbles? Observation boring</u> <u>Silty clay surface soil sample</u>																	
	DATA ENTRY BY: _____ QC REVIEW BY: _____ QA REVIEW BY: _____ DATE ENTERED: _____ REVIEW DATE: _____ REVIEW DATE: _____ QC REPORTS PRINTED? YES NO APPROVED WITH - WITHOUT REVISIONS APPROVED WITH - WITHOUT REVISIONS																	

100043

## GEOLIS, Soil Sampling Form



COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-007</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> 2 3 UNIT SYSTEM: <u>ENGLISH</u> METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1027</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>BGS</u>	SURFACE _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH  	SAMPLE DESCRIPTION MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - OOR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - VEG - GVL - ASP - CMT - <u>FL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>7.5 YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: <u>UNE</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - <u>MOD</u> - POR - NA PLASTICITY: NON - LOW - <u>MOD</u> - HIGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - BLT - <u>MOD</u> - WEL GRAIN TYPE: QTZ - <u>FRG</u> - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
SAMPLING INFORMATION		
SAMPLE TYPE: <u>DISCRETE</u> COMPOSITE OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSS - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: _____ LAB CONTROL SAMPLE ID: <u>NR</u>		
LAB TYPE CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH	LAB NAME <u>NY TEST Environmental Total Mercury</u> <u>60 Seaview Blvd</u> <u>Port Washington, NY 11050</u>	ANALYTICAL PARAMETERS <u>516) 625-5500</u> SPLIT SAMPLE ID NO.: _____ PARAMETERS: SAME OTHER: _____ QA/QC SAMPLES: COL - SPL - RNS - TRP - LCS
SPLIT SAMPLES: NON - CWN - OVR - OTH ORGANIZATION NAME: _____ REPRESENTATIVES NAME: _____ COMMENTS: <u>Silty clay soil; surface sample only; no observation boring</u>		
100044		
DATA ENTRY BY: _____ DATE ENTERED: _____ QC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS

## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-008</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>			
<b>SAMPLE IDENTIFICATION</b>				
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1032</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>BGS</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____			
<b>SITE SKETCH</b>	<b>SAMPLE DESCRIPTION</b>			
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GPB - LVS - <u>VEG</u> - GVL - ASP - CMT - <u>FL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>205YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: UNI - STN - MOT - <u>VAR</u> TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - <u>MOD</u> - POR - NA PLASTICITY: NON - <u>LOW</u> - <u>MOD</u> - HIGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - BLT - <u>MOD</u> - WEL GRAIN TYPE: QTZ - <u>FRG</u> - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD			
	<b>SAMPLING INFORMATION</b>			
	SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - BPT - BLP - BUC - SSB - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____			
	<b>LAB TYPE</b> <b>LAB NAME</b> <b>ANALYTICAL PARAMETERS</b> <b>NOTES</b>			
	CHM - RAD - GEO - OTH <u>NY TEST Environmental Total Mercury</u> CHM - RAD - GEO - OTH <u>60 Seaview Blvd</u> CHM - RAD - GEO - OTH <u>Port Washington (11050) 516) 625-5500</u>		<u>Anne Lee</u> <u>John Gasperi</u>	
	SPLIT SAMPLES: NON - CWN - CVR - OTH ORGANIZATION NAME: _____ REPRESENTATIVES NAME: _____		SPLIT SAMPLE ID NO.: _____ PARAMETERS: SAME OTHER: _____ QA/QC SAMPLES: COL - SPL - RNS - TRP - LCS	
	COMMENTS: <u>Observation borings: 0-1.6' Brown Silty clay; 1.6' to 2.2' Brown to light Brown silty clay; many small pebbles.</u>			
	DATA ENTRY BY: _____ QC REVIEW BY: _____ QA REVIEW BY: _____ DATE ENTERED: _____ REVIEW DATE: _____ REVIEW DATE: _____ QC REPORTS PRINTED? YES NO APPROVED WITH - WITHOUT REVISIONS APPROVED WITH - WITHOUT REVISIONS			

100045

## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM 009</u> DATE: <u>11-14-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
<b>SAMPLE IDENTIFICATION</b>		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1040</u> SAMPLED INTERVAL: <u>0</u> TO <u>6</u> FT-M <u>BGS</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
<b>SITE SKETCH</b>  	<b>SAMPLE DESCRIPTION</b> MATERIAL: NATURAL - <u>FL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - VEG - GVL - ASP - CMT - <u>FL</u> OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>BROWN</u> <u>2.5YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: UNI - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - MOD - POR - NA PLASTICITY: NON - LOW - MOD - HIGH - NA MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: NON - SILT - MOD - WEL GRAIN TYPE: GTZ - FRG - FOS - NA MATRIX: CAL - CXC - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE CNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
<b>SAMPLING INFORMATION</b>		
SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSS - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
<b>LAB TYPE</b> CHM - RAD - GEO - OTH	<b>LAB NAME</b> <u>NY TEST Environmental</u>	<b>ANALYTICAL PARAMETERS</b> <u>Total Mercury</u>
CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u> <u>Port Washington, NY 11050</u>	<u>516) 625-5500</u> <u>Anne Lee</u> <u>John Gasperi</u>
SPLIT SAMPLES: NON - OWN - CVR - OTH: _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ QAVOC SAMPLES: COL - SPL - RNS - TRP - LCS		
COMMENTS <u>No observation boring.</u>		
100046		
DATA ENTRY BY: _____ DATE ENTERED: _____ CC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS



# REGION 1 START GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u>	SAMPLE NO.: <u>PM-010</u>	
CLIENT: <u>U.S. EPA</u>	DATE: <u>11-13-97</u>	
PROJECT: <u>pyridium mercury</u>	SAMPLER: <u>G. Fowler</u>	
SITE: <u>Harriman, New York</u>	SIGNATURE: <u>G. Fowler</u>	

SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u>	<u>ESTIMATED</u>	<u>SURVEYED</u>
UNIT SYSTEM: <u>ENGLISH</u>	SURFACE ELEVATION: _____	
SAMPLE ID: _____	N. COORDINATE: _____	
TIME COLLECTED: <u>1045</u>	E. COORDINATE: _____	
SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-MBS		

<p><b>SITE SKETCH</b></p>	<p><b>SAMPLE DESCRIPTION</b></p> <p>MATERIAL: <u>NATURAL</u> - <u>FILL</u> - <u>UNCERTAIN</u></p> <p>APPEARANCE: <u>SHN</u> - <u>ODR</u> - <u>PRD</u> - <u>NA</u> - <u>OTHER</u>: _____</p> <p>INSTRUMENT 1 TYPE: _____ READING: _____</p> <p>INSTRUMENT 2 TYPE: _____ READING: _____</p> <p>SURFACE LAYER: <u>SOL</u> - <u>GRS</u> - <u>LVS</u> - <u>VEG</u> - <u>GVL</u> - <u>ASP</u> - <u>CMT</u> - <u>FL</u></p> <p>OTHER: _____</p> <p>THICKNESS (IN): _____ REMOVED SAMPLED _____</p> <p>SECONDARY TYPE: <u>NA</u> - <u>BED</u> - <u>VEN</u> - <u>MIX</u></p> <p>OVERALL COLOR: <u>BROWN</u></p> <p><u>7.5YR</u> <u>5.5YR</u> <u>5.0YR</u> <u>4.5YR</u> <u>4.0YR</u> <u>3.5YR</u> <u>3.0YR</u> <u>2.5YR</u> <u>2.0YR</u> <u>1.5YR</u> <u>1.0YR</u> <u>0.5YR</u></p> <p>COLORATION: <u>UNI</u> - <u>STN</u> - <u>MOT</u> - <u>VAR</u></p> <p>TEXTURE: _____</p> <p>GRAVEL: _____ %</p> <p>SAND: <u>C-M-F</u> _____ %</p> <p>SILT: _____ %</p> <p>CLAY: _____ %</p> <p>ORGANIC: _____ %</p> <p>ROUNDNESS: _____</p> <p>GRAVEL: <u>FAC</u> - <u>STR</u> - <u>ANG</u> - <u>SUB</u> - <u>RND</u> - <u>NA</u></p> <p>SAND: <u>ANG</u> - <u>SUB</u> - <u>RND</u> - <u>NA</u></p> <p>SORTING: <u>WEL</u> - <u>MOD</u> - <u>POOR</u> - <u>NA</u></p> <p>PLASTICITY: <u>NON</u> - <u>LOW</u> - <u>MOD</u> - <u>HGH</u> - <u>NA</u></p> <p>MOISTURE: <u>DRY</u> - <u>MST</u> - <u>WET</u> - <u>SAT</u></p> <p>CEMENTATION: <u>NON</u> - <u>BLT</u> - <u>MOD</u> - <u>WEL</u></p> <p>GRAIN TYPE: <u>GTZ</u> - <u>FRG</u> - <u>FOS</u> - <u>NA</u></p> <p>MATRIX: <u>CAL</u> - <u>CXD</u> - <u>ARG</u> - <u>SIL</u> - <u>NA</u></p> <p>STRENGTH: _____</p> <p><u>NONCOHESIVE</u> <u>CNS</u> - <u>FRM</u> - <u>LSE</u></p> <p><u>COHESIVE</u> <u>STF</u> - <u>FRM</u> - <u>SFT</u> - <u>HRD</u></p>
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SAMPLING INFORMATION	
SAMPLE TYPE: <u>DISCRETE</u> - <u>COMPOSITE</u> - <u>OTHER</u>	
DESCRIBE: <u>Grab</u>	
SAMPLING METHOD: <u>FL</u> - <u>SPT</u> - <u>BLP</u> - <u>BUC</u> - <u>SSS</u> - <u>STS</u> - <u>CTS</u>	
OTHER: _____	
SAMPLER DECONTAMINATION: <u>DED</u> - <u>LAB</u> - <u>FLD</u> - <u>OTH</u>	
DESCRIBE OTHER: _____	
PROCEDURE: <u>DET</u> - <u>STM</u> - <u>ACE</u> - <u>PEX</u> - <u>MET</u> - <u>NON</u> - <u>OTH</u>	
DESCRIBE OTHER: _____	
CA SAMPLES: _____	
CO-LOCATED SAMPLE ID: <u>NR</u>	
SPLIT SAMPLE ID: <u>NR</u>	
RINSE BLANK ID: <u>NR</u>	
TRIP BLANK ID: <u>NR</u>	
LAB CONTROL SAMPLE ID: _____	



LAB TYPE	LAB NAME	ANALYTICAL PARAMETERS	NOTES
CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>	
CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>		<u>Anne Lee</u>
CHM - RAD - GEO - OTH	<u>Post Washington (11050)</u>	<u>516) 625-5500</u>	<u>John Gasperi</u>
SPLIT SAMPLES: <u>NON</u> - <u>CWN</u> - <u>CVR</u> - <u>OTH</u>	SPLIT SAMPLE ID NO.: _____		
ORGANIZATION NAME: _____	PARAMETERS SAME OTHER: _____		
REPRESENTATIVES NAME: _____	CAVOC SAMPLES: _____		

COMMENTS: 4 observation borings at PM 010 - white clay like material was hit at a depth of 1.6' - at 1st boring (1.4' from fence) weeds/sods at 2 feet. 32x4' w approximate sink holes 6' from sample; white material is layered in sink hole.

DATA ENTRY BY: _____	QC REVIEW BY: _____	CA REVIEW BY: _____
DATE ENTERED: _____	REVIEW DATE: _____	REVIEW DATE: _____
CC REPORTS PRINTED? <u>YES</u> <u>NO</u>	APPROVED WITH - WITHOUT REVISIONS	APPROVED WITH - WITHOUT REVISIONS



100047

## GEOLIS Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium Mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM 011</u> DATE: <u>11-13-87</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1044</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>B38</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH	SAMPLE DESCRIPTION	
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - NA - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRS - LVS - <u>VEG</u> - GVL - ASP - CMT - FL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>7.5 YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: UNI - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - <u>SUB</u> - RND - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - <u>MOD</u> - POR - NA PLASTICITY: NON - LOW - <u>MOD</u> - HIGH - NA MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: NON - SILT - <u>MOD</u> - WEL GRAIN TYPE: GTZ - <u>FRG</u> - FOS - NA MATRIX: CAL - OXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
	SAMPLING INFORMATION	
	SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSB - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: <u>NR</u> RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____	
	LAB TYPE      LAB NAME      ANALYTICAL PARAMETERS      NOTES	
	CHM - RAD - GEO - OTH <u>NY TEST Environmental Total Mercury</u> CHM - RAD - GEO - OTH <u>60 Seaview Blvd</u> CHM - RAD - GEO - OTH <u>Port Washington, NY 11050</u> <u>516) 625-5500</u> <u>Anne Lee</u> <u>John Gasperi</u>	
	SPLIT SAMPLES: NON - CWN - CVR - OTH _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ QAVOC SAMPLES: COL - SPL - FNS - TRP - LCS	
	COMMENTS: <u>Refusal at 15" brown silty clay soil with gravel</u> <u>Observation boring: no clay like material</u>	
	DATA ENTRY BY: _____ QC REVIEW BY: _____ QA REVIEW BY: _____ DATE ENTERED: _____ REVIEW DATE: _____ REVIEW DATE: _____ CC REPORTS PRINTED? YES <input type="checkbox"/> NO <input type="checkbox"/> APPROVED WITH - WITHOUT REVISIONS APPROVED WITH - WITHOUT REVISIONS	



100048

GEOLIS<sub>®</sub> Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM 012</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
<b>SAMPLE IDENTIFICATION</b>		
QUALITY LEVEL: <u>1</u> 2 3 UNIT SYSTEM: <u>ENGLISH</u> METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1950</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M (BGS)	SURFACE _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
<b>SITE SKETCH</b>  	<b>SAMPLE DESCRIPTION</b> MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - <u>VEG</u> - GVL - ASP - CMT - FL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>BROWN</u> <u>2.5 YR</u> <u>MUN</u> GSA WET - <u>DRY</u> COLORATION: UNI - BTN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - <u>MOD</u> - POR - NA PLASTICITY: NON - LOW - <u>MOD</u> - HIGH - NA MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: NON - SILT - <u>MOD</u> - WEL GRAIN TYPE: GTZ - FRG - FOS - NA MATRIX: CAL - CXC - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
<b>SAMPLING INFORMATION</b>		
SAMPLE TYPE: <u>DISCRETE</u> COMPOSITE OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSB - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
<b>LAB TYPE</b>	<b>LAB NAME</b>	<b>ANALYTICAL PARAMETERS</b>
CHM - RAD - GEO - OTH	<u>NY TEST Environmental</u>	<u>Total Mercury</u>
CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u>	<u>Anne Lee</u>
CHM - RAD - GEO - OTH	<u>Port Washington, NY 11050</u>	<u>John Gasperi</u>
SPLIT SAMPLES: NON - OWN - OVR - OTH _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ CAVOC SAMPLES: COL - SPL - FNS - TRP - LCS		
COMMENTS: <u>Refusal at 6" - observation boring; rock - cobble</u> <u>silty clay soils</u>		
<b>DATA ENTRY BY:</b> _____ <b>DATE ENTERED:</b> _____ <b>CC REPORTS PRINTED?</b> YES NO	<b>CC REVIEW BY:</b> _____ <b>REVIEW DATE:</b> _____ <b>APPROVED WITH - WITHOUT REVISIONS</b>	<b>QA REVIEW BY:</b> _____ <b>REVIEW DATE:</b> _____ <b>APPROVED WITH - WITHOUT REVISIONS</b>


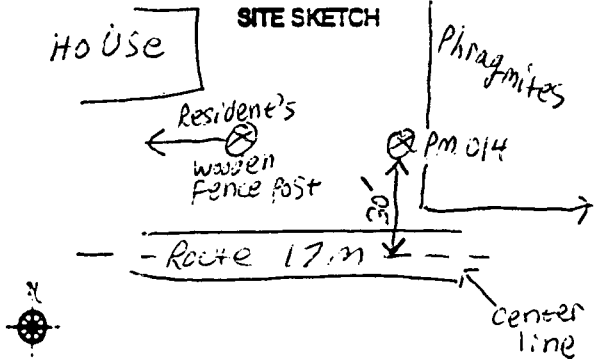
100049

GEOLIS<sub>®</sub> Soil Sampling Form



COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM 013</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1055</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>838</u>	SURFACE _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH	SAMPLE DESCRIPTION	
	MATERIAL: NATURAL - <u>FILL</u> - UNCERTAIN APPEARANCE: SHN - ODR - PRD - NA - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - GRB - LVS - <u>VEG</u> - GVL - ASP - CNT - FL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>7.5 YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: UNI - STN - MOT - <u>VAR</u> TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: WEL - <u>MOD</u> - POR - NA PLASTICITY: NON - LOW - <u>MOD</u> - HIGH - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: NON - BLT - <u>MOD</u> - WEL GRAIN TYPE: QTZ - FRG - FOS - NA MATRIX: CAL - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRO	
	SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER _____ DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - BPT - BLP - BUC - SSB - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____	
	LAB TYPE LAB NAME ANALYTICAL PARAMETERS NOTES CHM - RAD - GEO - OTH <u>NY TEST Environmental Total Mercury</u> CHM - RAD - GEO - OTH <u>60 Seaview Blvd</u> <u>Anne Lee</u> CHM - RAD - GEO - OTH <u>Port Washington (11050)</u> <u>516) 625-5500</u> <u>John Gasperi</u>	
	SPLIT SAMPLES: NON - CWN - CVR - OTH _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ QACQ SAMPLES: COL - SPL - RNS - TRP - LCS	
	COMMENTS: <u>observation boring; white material at 1" to 14", brown soil below and small pieces of gravel; refuse at 20.5". silty clay soil.</u>	
	DATA ENTRY BY: _____ QC REVIEW BY: _____ QA REVIEW BY: _____ DATE ENTERED: _____ REVIEW DATE: _____ REVIEW DATE: _____ CC REPORTS PRINTED? YES NO APPROVED WITH - WITHOUT REVISIONS APPROVED WITH - WITHOUT REVISIONS	

100050

## GEOLIS, Soil Sampling Form



COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-014</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
<b>SAMPLE IDENTIFICATION</b>		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1109</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M (B39)	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
<b>SITE SKETCH</b> 	<b>SAMPLE DESCRIPTION</b> MATERIAL: <u>NATURAL</u> - FILL - UNCERTAIN APPEARANCE: SHN - ODR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - <u>GPS</u> - LVS - VEG - GVL - ASP - CMT - FL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>2.5YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: UNB - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - RND - <u>NA</u> SAND: ANG - SUB - RND - <u>NA</u> SORTING: <u>WEL</u> - MOD - POR - <u>NA</u> PLASTICITY: NON - LOW - MOD - <u>HGH</u> - <u>NA</u> MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: NON - SILT - <u>MOD</u> - WEL GRAIN TYPE: <u>GT2</u> - FRG - FOS - <u>NA</u> MATRIX: CAL - CXC - ARG - SIL - <u>NA</u> STRENGTH: NONCOHESIVE CDS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRO	
<b>SAMPLING INFORMATION</b>		
SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - GSB - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
<b>LAB TYPE</b> CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH	<b>LAB NAME</b> <u>NY TEST Environmental</u> <u>60 Seaview Blvd</u> <u>Port Washington, NY 11050</u>	<b>ANALYTICAL PARAMETERS</b> <u>Total Mercury</u> <u>(16) 625-5500</u>
<b>NOTES</b>		
<u>Anne Lee</u> <u>John Gasperi</u>		
SPLIT SAMPLES: NON - CWN - CWR - OTH: _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ QA/QC SAMPLES: CCL - SPL - RNS - TRP - LCS		
COMMENTS: <u>Observation boring to 3'; fine-grained silty clay soil</u>		
100051		
DATA ENTRY BY: _____ DATE ENTERED: _____ QC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS

# GEOLIS<sub>®</sub> Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM 015</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
<b>SAMPLE IDENTIFICATION</b>		
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1125</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>BGS</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
<b>SITE SKETCH</b>  	<b>SAMPLE DESCRIPTION</b> MATERIAL: <u>NATURAL</u> - FILL - UNCERTAIN APPEARANCE: SHN - ODR - PRO - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - <u>GRB</u> - LVS - VEG - GVL - ASP - CMT - FL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: NA - BED - VEN - MIX OVERALL COLOR: <u>Brown</u> <u>7.5YR</u> <u>MUN</u> - GSA WET - <u>DRY</u> COLORATION: UNI - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: C - M - F _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: FAC - STR - ANG - SUB - <u>RND</u> - NA SAND: ANG - SUB - <u>RND</u> - NA SORTING: <u>WEL</u> - MOD - POR - NA PLASTICITY: <u>NON</u> - LOW - MOD - <u>HGH</u> - NA MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: <u>NON</u> - BLT - MOD - WEL GRAIN TYPE: <u>GTZ</u> - FRG - FOS - NA MATRIX: CAL - OXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE DNS - FRM - LSE COHESIVE STF - FRM - <u>SFT</u> - HRD	
<b>SAMPLING INFORMATION</b>		
SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSB - STB - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
LAB TYPE CHM - RAD - GEO - OTH	LAB NAME <u>NY TEST Environmental</u>	ANALYTICAL PARAMETERS <u>Total Mercury</u>
CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH	<u>60 Seaview Blvd</u> <u>Port Washington, NY 11050</u>	<u>516) 625-5500</u> <u>Anne Lee</u> <u>John Gasperi</u>
SPLIT SAMPLES: NON - OWN - OVR - OTH _____ SPLIT SAMPLE ID NO.: _____ ORGANIZATION NAME: _____ PARAMETERS: SAME OTHER: _____ REPRESENTATIVES NAME: _____ QA/QC SAMPLES: CCL - SPL - RNS - TRP - LCS		
COMMENTS: <u>no observation boring</u>		
DATA ENTRY BY: _____ DATE ENTERED: _____ QC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS



100052

## GEOLIS, Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM 016</u> DATE: <u>11-13-87</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>	
SAMPLE IDENTIFICATION		
QUALITY LEVEL: <u>1</u> 2 3 UNIT SYSTEM: <u>ENGLISH</u> METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1120</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>BGS</u>	SURFACE _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____	
SITE SKETCH  	SAMPLE DESCRIPTION MATERIAL: <u>NATURAL</u> - FILL - UNCERTAIN APPEARANCE: <u>SHN</u> - ODR - PRD - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: SOL - <u>SPB</u> - LVS - VEG - GVL - ASP - CMT - FIL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: <u>NA</u> - BED - VEN - MIX OVERALL COLOR: <u>BROWN</u> <u>7.5YR</u> <u>MUN</u> - GSA <u>WET</u> - <u>DRY</u> COLORATION: <u>UNI</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: <u>C.M.F</u> _____ % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: <u>FAC</u> - STR - ANG - SUB - <u>RND</u> - NA SAND: <u>ANG</u> - SUB - <u>RND</u> - NA SORTING: <u>WEL</u> - MOD - POR - NA PLASTICITY: <u>NON</u> - LOW - MOD - <u>HGH</u> - NA MOISTURE: <u>DRY</u> - MST - WET - SAT CEMENTATION: <u>NON</u> - BLT - MOD - WEL GRAIN TYPE: <u>GTZ</u> - FRG - FOS - NA MATRIX: <u>CAL</u> - CXD - ARG - <u>SLY</u> - NA STRENGTH: NONCOHESIVE <u>CNS</u> - FRM - LSE COHESIVE <u>STF</u> - FRM - <u>SFT</u> - HRD	
SAMPLING INFORMATION		
SAMPLE TYPE: <u>DISCRETE</u> COMPOSITE OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - BPT - BLP - BUC - SSB - STB - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
LAB TYPE CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH CHM - RAD - GEO - OTH	LAB NAME <u>NY TEST Environmental Total Mercury</u> <u>60 Sequim Road</u> <u>Port Washington, NY 11050</u>	ANALYTICAL PARAMETERS <u>516) 625-5500</u> NOTES <u>Anne Lee</u> <u>John Gasperi</u>
SPLIT SAMPLES: <u>NON</u> - CWN - CVR - OTH ORGANIZATION NAME: _____ REPRESENTATIVES NAME: _____ SPLIT SAMPLE ID NO.: _____ PARAMETERS: SAME OTHER: _____ QAQC SAMPLES: <u>COL</u> - SPL - FNS - TRP - LCS		
COMMENTS: <u>Observation boring - Refusal at 2'; brown silty clay, no white material observed</u>		
DATA ENTRY BY: _____ DATE ENTERED: _____ CC REPORTS PRINTED? <u>YES</u> NO		
CC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS: _____		
QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS: _____		

100053

## GEOLIS Soil Sampling Form

COMPANY: <u>Weston/START</u> CLIENT: <u>U.S. EPA</u> PROJECT: <u>pyridium mercury</u> SITE: <u>Harriman, New York</u>	SAMPLE NO.: <u>PM-017</u> DATE: <u>11-13-97</u> SAMPLER: <u>G. Fowler</u> SIGNATURE: <u>G. Fowler</u>		
SAMPLE IDENTIFICATION			
QUALITY LEVEL: <u>1</u> - 2 - 3 UNIT SYSTEM: <u>ENGLISH</u> - METRIC SAMPLE ID: _____ TIME COLLECTED: <u>1115</u> SAMPLED INTERVAL: <u>0</u> TO <u>6"</u> FT-M <u>BGS</u>	SURFACE: _____ ESTIMATED _____ SURVEYED _____ ELEVATION: _____ N. COORDINATE: _____ E. COORDINATE: _____		
SITE SKETCH	SAMPLE DESCRIPTION		
	MATERIAL: <u>NATURAL</u> - FILL - UNCERTAIN APPEARANCE: <u>SHN</u> - OOR - PRO - <u>NA</u> - OTHER: _____ INSTRUMENT 1 TYPE: _____ READING: _____ INSTRUMENT 2 TYPE: _____ READING: _____ SURFACE LAYER: <u>SOL</u> - <u>GRB</u> - LVS - VEG - GVL - ASP - CMT - FL OTHER: _____ THICKNESS (IN): _____ REMOVED SAMPLED _____ SECONDARY TYPE: <u>NA</u> - BED - VEN - MIX OVERALL COLOR: <u>BROWN</u> <u>7.5YR</u> <u>MUN</u> - GSA WET <u>DRY</u> COLORATION: <u>UNI</u> - STN - MOT - VAR TEXTURE: GRAVEL: _____ % SAND: <u>C-M-F</u> % SILT: _____ % CLAY: _____ % ORGANIC: _____ % ROUNDNESS: GRAVEL: <u>FAC</u> - STR - ANG - SUB - RND - NA SAND: <u>ANG</u> - SUB - RND - NA SORTING: <u>WEL</u> - MOD - POR - NA PLASTICITY: <u>NON</u> - LCW - MOD - <u>FGH</u> - NA MOISTURE: <u>DRY</u> - MBT - WET - SAT CEMENTATION: <u>NON</u> - BLT - <u>MOD</u> - WEL GRAIN TYPE: <u>GTZ</u> - FRG - FOS - NA MATRIX: <u>CAL</u> - CXD - ARG - <u>SIL</u> - NA STRENGTH: NONCOHESIVE <u>CNS</u> - FRM - LSE COHESIVE <u>STF</u> - FRM - <u>SFT</u> - HRD		
	SAMPLE TYPE: <u>DISCRETE</u> - COMPOSITE - OTHER DESCRIBE: <u>Grab</u> SAMPLING METHOD: <u>FL</u> - SPT - BLP - BUC - SSS - STS - CTS OTHER: _____ SAMPLER DECONTAMINATION: <u>DED</u> - LAB - FLD - OTH DESCRIBE OTHER: _____ PROCEDURE: DET - STM - ACE - HEX - MET - NON - OTH DESCRIBE OTHER: _____ QA SAMPLES: CO-LOCATED SAMPLE ID: <u>NR</u> SPLIT SAMPLE ID: _____ RINSE BLANK ID: <u>NR</u> TRIP BLANK ID: <u>NR</u> LAB CONTROL SAMPLE ID: _____		
	LAB TYPE LAB NAME ANALYTICAL PARAMETERS NOTES CHM - RAD - GEO - OTH <u>NY TEST Environmental Total Mercury</u> CHM - RAD - GEO - OTH <u>60 Seaview Blvd</u> <u>Anne Lee</u> CHM - RAD - GEO - OTH <u>Pot + Washington (1050)</u> <u>616) 625-5500</u> <u>John Gasperi</u>		
	SPLIT SAMPLES: <u>NON</u> - CWN - CVR - OTH ORGANIZATION NAME: _____ REPRESENTATIVES NAME: _____ SPLIT SAMPLE ID NO.: _____ PARAMETERS: SAME OTHER: _____ QA/QC SAMPLES: <u>CCL</u> - SPL - RNS - TRP - LCS		
	COMMENTS: <u>observation boring - Refusal at 3' brown silt clay with rocks</u> <u>No white material observed</u>		
	100054		
	DATA ENTRY BY: _____ DATE ENTERED: _____ CC REPORTS PRINTED? YES NO	QC REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS	QA REVIEW BY: _____ REVIEW DATE: _____ APPROVED WITH - WITHOUT REVISIONS





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Edison, New Jersey 08837-3703  
908-225-6116 • Fax 908-225-7037

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT 68-W5-0019

START-02-F-01625

**TRANSMITTAL MEMO**

To: Ms. Irmgard Huhn  
Removal Action Branch, U.S. EPA Region II

From: Jennifer Leahy, Inorganic Data Reviewer  
START Region II

Subject: Pyridium Mercury Site, Harriman, New York

Date: February 3, 1998

The purpose of this memo is to transmit the following information:

- Data validation results for the following parameters:  
Mercury
- Matrices and Number of Samples:  
Soil 16 samples
- Sampling date: November 13, 1997

The final data assessment narrative and original analytical data package are attached.

cc: START PM G. Fowler, START PM  
START FILE TDD #: 02-9711-004A  
ASC TDD#: 02-9711-009

100055

U.S. ENVIRONMENTAL PROTECTION AGENCY

MEMORANDUM

DATE: February 3, 1998

TO: Ms. Irmgard Huhn  
USEPA Region II

FROM: Jennifer Leahy  
START Data Review Team

SUBJECT: QA/QC Compliance Review Summary

As requested quality control and performance measures for the data packages noted have been examined and compared to EPA standards for compliance. Measures for the following general areas were evaluated, as applicable:

Data Completeness	Blanks
Spectra Matching Quality	DFTPP and BFB Tuning
Surrogate Spikes	Chromatography
Matrix Spikes/Duplicates	Holding Times
Calibration	Compound ID (HSL, TIC)

Any statistical measures used to support the following conclusions are attached so that the review may be reviewed by others.

Summary of Results

	I Hg	II	III	IV
Acceptable as Submitted	_____	_____	_____	_____
Acceptable with Comments	<u>  X  </u>	_____	_____	_____
Unacceptable, Action Pending	_____	_____	_____	_____
Unacceptable	_____	_____	_____	_____

Data Reviewed by: Jennifer Leahy Date: 02/3/98

Approved by: *M. Scott Butler* Date: 2/3/98

Area Code/Phone No.: (732) 225-6116

100056

## **NARRATIVE**

CASE No. RFP 2239

SITE NAME: Pyridium Mercury Site

Harriman, New York

Laboratory Name: NYTEST Environmental, Inc.

### **INTRODUCTION:**

The laboratory's portion of this Case consisted of 16 soil samples collected on 11/13/97.

The laboratory reported No problem(s) with the receipt of these samples.

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The laboratory reported No problems with the analyses of this inorganic data package.

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The evaluator has commented on the criteria specified under each fraction heading. All criteria have been assessed, but no discussion is given where the evaluator has determined that criteria were adequately performed or require no comment.

A:\QAQC.DAT

100057

Inorganic:

- Y Data Summary/Tabulated Results
- Y Initial and Continuing Calibration
- Y Blanks
- N/A ICP Interference Check
- Y Spike Sample Recovery
- Y Duplicates *Low 3/12*
- Y Detection Limits
- N/A Standard Addition Results
- N/A ICP Serial Dilutions
- Y Holding Times
- N/A ICP Interelement Correction Factors
- N/A ICP Linear Ranges
- Y Chain of Custody
- Y Raw Data
- Y Quantitation, Conversions, Dilutions, etc.

100058

# OTHER ANALYTES WORK TABLE

Project: Pyridium Mercury

START PM: Gene Fowler

Sampling Date: November 13, 1997

## SAMPLE #/CONCENTRATION (mg/Kg)

Analytical Results	Instrument Detection Limit	Matrix Sample ID Laboratory ID	Soil PM001 291301	Soil PM002 291302	Soil PM003 291303	Soil PM005 291304	Soil PM006 291305	Soil PM007 291306
Percent Solids	0.04		81.3	84.1	76.3	83.4	88	71.1
Dilution Factor			1	1	1	1	1	1
Mercury			0.36	9.7	217	122	0.21	0.66

Analytical Results	Instrument Detection Limit	Matrix Sample ID Laboratory ID	Soil PM008 291307	Soil PM009 291308	Soil PM010 291309	Soil PM011 291310	Soil PM012 291311	Soil PM013 291312
Percent Solids	0.04		74.9	61	76.7	72.9	29.1	51.7
Dilution Factor			1	1	1	1	1	1
Mercury			4.7	3.8	25.4	1.1	2.7 J	284

Analytical Results	Instrument Detection Limit	Matrix Sample ID Laboratory ID	Soil PM014 291313	Soil PM015 291314	Soil PM016 291315	Soil PM017 291316		
Percent Solids	0.04		73	70.7	70.7	77.2		
Dilution Factor			1	1	1	1		
Mercury			0.26	0.28	2.8	0.15		

J - estimated value

100059

Case #: RFP # 2239

Site: Pyridium Mercury

SDG#: RFP 1

Lab: NYTEST Environmental

Matrix:  
Soil 16

Contractor: WESTON-START

Reviewer: Jennifer Leahy

A.2.1 Validation Flags-

The following flags have been applied in red by the data validator and must be considered by the data user.

J-

This flag indicates the result qualified as estimated.

Red- Line-

A red-line drawn through a sample result indicates an unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data-

The results that do not carry "J" or a "redline" are fully usable.

Contractual Qualifiers-

The legend of contractual qualifiers applied by the laboratory on Form I's is found on page B-20 of SOW ILM01.0.

A.2.2 The data assessment is provided below and on the attached sheets.

On 13 November 1997, USEPA Region II Superfund Technical Assessment and Response Team (START) sampling personnel collected 16 soil samples for Quality Assurance Level 1 (QA-1) Total Mercury analysis by NYTEST Environmental Inc., Port Washington, New York.

Client identification (ID) are as follows:

<u>Client ID Nos:</u>	<u>Lab ID</u>	<u>Matrix</u>
PM001	291301	Soil
PM002	291302	Soil
PM003	291303	Soil
PM005	291304	Soil
PM006	291305	Soil
PM007	291306	Soil
PM008	291307	Soil
PM009	291308	Soil
PM010	291309	Soil
PM011	291310	Soil
PM012	291311	Soil
PM013	291312	Soil
PM014	291313	Soil

Title: Evaluation of Inorganic Data for the  
Contract Laboratory Program  
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992  
Number: HW-2  
Revision: 11

A.2.2 (continuation)

No field duplicates were analyzed for this QA-1 sampling event.

The laboratory did not report any problem(s) with the receipt of these samples.

**Holding Times:** All samples were analyzed within 3 days of receipt; holding times were not exceeded.

**Raw Data:** The laboratory provided the following supporting data for this package: Initial and Continuing Calibration Verification, CRDL Standard for AA, Initial, Analytical and Method Blank, Matrix Spike Recovery, Laboratory Duplicates, Laboratory Control Sample, and Instrument Detection Limits.

**Initial and Continuing Calibration Verification:** All ICV/CCV recoveries are within the acceptable range of 80-120%.

**CRDL Standards for AA:** The CRA recovery are within the acceptable range of 80-120%.

**Analytical and Method Blank Summary:** The ICB, CCBs and Preparation Blank were below the CRDL.

**Matrix Spike Recovery:** The Spike Recovery is within the acceptable range of 75-125%.

**Laboratory Duplicates:** The data met the laboratory duplicated analysis QC criteria ( $< 2X$  CRDL).

**Laboratory Control Sample:** LCS recoveries are within the acceptable range of 80-120%.

**Percent Solids:** The Percent Solids for Sample No. PM012 was  $< 50\%$ . Therefore, the sample result for mercury was flagged as estimated "J".

A.2.3 Contract Problem/Non-Compliance:

None.

Contractor Reviewer:

Jennifer Leary  
Signature

2/3/98  
Date:

Verified by:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date:



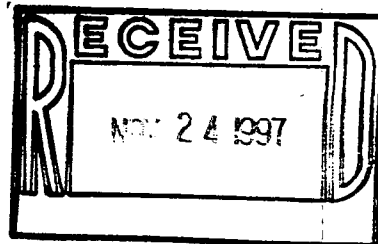
TOTAL ANALYTICAL SERVICES FOR A SAFE ENVIRONMENT

nytest environmental inc.

November 18, 1997

Weston  
1090 King George's Post Rd., Suite 201  
Edison, NJ 08837

Attn : Smita Sumbaly  
Ref : RFP 2239. Harriman, NY  
P.O. #: 87354



Nytest Environmental, Inc., is pleased to submit our Project Number 9723560 for Login Number 32913, SDG Number RFP1, on your sample(s) received 11/13/97.

We certify that this report is a true report of results obtained from our tests of this material.

Test sample(s) associated with this project will be retained for a period of thirty (30) days, unless otherwise instructed.

My staff is available to answer any questions concerning our report and we look forward to serving your future analytical needs.

Respectfully submitted,

Lori Beyer  
Laboratory Director  
Nytest Environmental, Inc.

Encl: 1 Bound Copy  
Shipped Via:

NYS Lab ID#10195  
NJ Cert.#73469

Report on sample(s) furnished by client applies to sample(s). Report on sample(s) obtained by us applies to lot sampled. Information contained herein is not to be used for reproduction except by special permission. In the event that there are portions or parts of sample(s) remaining after Nytest has completed the required tests, Nytest shall have the option of returning such sample(s) to the client at the client's expense.

100062

box 1518 ☐ 60 seaview blvd., port washington, ny 11050 ☐ (516) 625-5500  
fax (516) 625-1274



NYTEST ENVIRONMENTAL Inc.

SDG: RFP 1

LABORATORY NUMBER	SAMPLE IDENTIFICATION	TYPE OF SAMPLE
3291301	PM001	Soil
3291302	PM002	Soil
3291303	PM003	Soil
3291304	PM005	Soil
3291305	PM006	Soil
3291306	PM007	Soil
3291307	PM008	Soil
3291308	PM009	Soil
3291309	PM010	Soil
3291310	PM011	Soil
3291311	PM012	Soil
3291312	PM013	Soil
3291313	PM014	Soil
3291314	PM015	Soil
3291315	PM016	Soil
3291316	PM017	Soil
3291317	PM017MS	Soil
3291318	PM017MSD	Soil
3291319	PICKUP	Soil

000001

100063

RFP No.:

## CHAIN OF CUSTODY RECORD


 WESTON  
 MANAGERS DESIGNERS CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

EPA CONTRACT 68-W5-0019

Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:

Preservative Box No.:

1. Surface Water
2. Ground Water
3. Leachate
4. Rinseate
5. Soil/Sediment
6. Oil
7. Waste
8. Other (Specify)

1. HCl
2. HNO<sub>3</sub>
3. Na<sub>2</sub>SO<sub>4</sub>
4. H<sub>2</sub>SO<sub>4</sub>
5. Other (Specify)
6. Ice Only
- N. Not Preserved
- See Comments

Send verbal and written results to:

Roy F. Weston, Inc., USEPA Region II START

Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703

Attention: Smits Sumbely, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	BAS ANALYSIS					RCRA ANALYSIS			OTHER
						VOA	ENA	PEST	PCB	TAL	CN	KIN	COR	
PM001	11/13/97/0830	5	L	G	6									Total Mercury
PM002	11/13/97/0900													
PM003	11/13/97/0910													
<del>PM004</del>	<del>11/13/97/</del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	<del></del>	
PM005	11/13/97/0945													
PM006	11/13/97/1020													
PM007	11/13/97/1027													
PM008	11/13/97/1032													
PM009	11/13/97/1040													
PM010	11/13/97/1045													
PM011	11/13/97/1044	✓	✓	✓	✓									✓
Comments:														

Comments:

Person Assuming Responsibility for Sample:

Gene P. Fowler

Gene Fowler

Time

Date (MM/DD/YY)

1515

11/13/97

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	Gene Fowler	1530	11/13		Shipment to Lab
	Steve Wake	2000	11/13		

y F. Weston, Inc.

DERAL PROGRAMS DIVISION

 Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental  
 Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

000002

100064

RFP No.:

2239

No.:

87354

## CHAIN OF CUSTODY RECORD



SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

EPA CONTRACT 68-W5-0019

Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:

1. Surface Water
2. Ground Water
3. Leachate
4. Rinseate
5. Soil/Sediment
6. Oil
7. Waste
8. Other (Specify)

Preservative Box No.:

1. HCl
2. HN03
3. Na2SO4
4. H2SO4
5. Other (Specify)
6. Ice Only
- N. Not Preserved
- See Comments

Send verbal and written results to:

Roy F. Weston, Inc., USEPA Region II START

Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703

Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	BAS ANALYSIS					RCRA ANALYSIS			OTHER
						VOA	ENR	PEST	PCB	TALCN	KEN	COR	REAC	
PM012	11/13/97/1050	5	L	G	6									Total Mercury
PM013	11/13/97/1055													
PM014	11/13/97/1109													
PM015	11/13/97/1125													
PM016	11/13/97/1120													
PM017	11/13/97/1115	✓	✓	✓	✓									✓

Comments:

Person Assuming Responsibility for Sample:

Gene Fowler Gene Fowler

Time

Date (MM/DD/YY)

1515

11/13/97

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	Gene Fowler	1530	11/13	Gene Fowler	Shipment to Lab
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
	Hydra	2000			
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
				P. Hand	11/13/97 20:00

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental  
 Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

000003 100065

Person Breaching Risk  
Sample Counts & Acceptance  
Ability for Sample

NAME: *P. Harris*

TITLE: *JC*

INCLUSION Date Broken *11/17/97* Military Time Seal Broken: *60:00*  
Login #: *32913* Analytical Parameter/Fraction: *Hg*

SAMPLE NO.	ALIQUT/EXTRACT NO.	SAMPLE NO.	ALIQUT/EXTRACT NO.
PM001	32913-01	PM012	32913-11
PM002	02	PM013	12
PM003	03	PM014	13
PM005	04	PM015	14
PM006	05	PM016	15
PM007	06	PM017	16
PM008	07	<del># Pick up</del> PM017MS	17
PM009	08	PM017MSD	18
PM010	09	Pick up	19
PM011	10		

DATE	TIME	RELINQUISHED BY	RECEIVED BY	PURPOSE OF CHANGE OF CUST.
11/15/97	1400	PRINTED NAME <i>P. Harris</i> SIGNATURE <i>P. Harris</i>	PRINTED NAME <i>P. Harris</i> SIGNATURE <i>P. Harris</i>	<i>Hg</i>
11/15/97	1600	PRINTED NAME <i>P. Harris</i> SIGNATURE <i>P. Harris</i>	PRINTED NAME <i>P. Harris</i> SIGNATURE <i>P. Harris</i>	<i>Storage</i>
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	
		PRINTED NAME SIGNATURE	PRINTED NAME SIGNATURE	

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# LABORATORY DELIVERABLES

	Check if Complete
1. Cover page, Title page listing Lab certification # facility name & address, & date of report	<u>✓</u>
2. Table of Contents	<u>✓</u>
3. Summary sheets listing analytical results for all targeted and non-targeted compounds	<u>NA</u>
4. Summary Table cross referencing field ID #'s vs. Lab ID #'s	<u>✓</u>
5. Document bound, paginated and legible	<u>✓</u>
6. Chain of custody	<u>✓</u>
7. Methodology Summary	<u>✓</u>
8. Laboratory Chronicle and Holding Time check	<u>✓</u>
9. Results submitted on a dry weight basis (if applicable)	<u>✓</u>
10. Method Detection Limits	<u>NA</u>
11. Lab certified by NJDEP for parameters or appropriate category of parameters or a member of the USEPA CLP	<u>✓</u>
12. Non-conformance summary	<u>✓</u>

Jon Bg  
Laboratory Manager or Environmental  
Consultant's Signature

11/18/97

Date

100067

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**METAL ANALYSIS CONFORMANCE/NON-CONFORMANCE SUMMARY FORMAT**

	<u>NO</u>	<u>YES</u>
1. Calibration Summary Meet Criteria	—	✓
2. ICP Interference Check Sample Results Summary Submitted (if applicable) / Meet Criteria	—	✓
3. Serial Dilution Summary Submitted (if applicable) / Meet Criteria	—	✓
4. Laboratory Control Sample Summary Submitted (if applicable) / Meet Criteria	—	✓
5. Blank Contamination - If yes, list compounds and concentrations in each blank:	✓	
<hr/>		
6. Matrix Spike/Matrix Spike Duplicate Recoveries Meet Criteria (if not met, list these compounds and their recoveries which fall outside the acceptable range)	—	✓
<hr/>		
7. Extraction Holding Time Met If not met, list number of days exceeded for each sample:	—	✓
<hr/>		
8. Analysis Holding Time Met If not met, list number of days exceeded for each sample:	—	✓
<hr/>		
Additional Comments: <hr/>		
<hr/>		

Laboratory Manager: \_\_\_\_\_

*Jan Bg*

Date: 11/18/97

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## Laboratory Chronicle

Client Name: Weston

Log In No: 32913

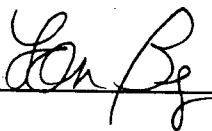
Date Received: 11/13/97

Sample ID: As per chain of custody

### Inorganics:

1. Mercury    Digested: 11/15/97 Analyzed: 11/16/97

Section Supervisor  
Review and Approval



Quality Control Supervisor  
Review & Approval



Dates are included for re-extractions and reanalysis.

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CASE NARRATIVE  
METALS

Login No: 32913

SDG No: RFP 1

**HOLDING TIMES**

All samples associated with this SDG/LOGIN were prepared and analyzed within the specified holding time.

**CALIBRATIONS**

All ICV and CCV standards meet QC criteria.

The percent recovery of all components in the CRDL standard recovered within NEI control limits of  $\pm 50\%$ . Note that CLP SOW ILM04.0 does not specify control limits for the CRDL standard.

**BLANKS**

All preparation blanks and calibration blanks associated with these analyses meet QC criteria.

**MATRIX SPIKES**

Sample PM017MSD was utilized as the matrix spike sample for these analyses.

All matrix spike recoveries met the 75-125% recovery criteria.

**DUPLICATES**

Sample PM017MS was utilized as the duplicate sample for these analyses.

All Relative Percent Differences (RPDs) met QC criteria.

Note that all RPDs of 200% are due to one analyte being reported above the Instrument Detection Limit (IDL) and one result below the IDL.

**LABORATORY CONTROL SAMPLE (LCS)**

The percent recovery of all components in the LCS met QC criteria.

**SAMPLES**

All samples were analyzed in accordance with the requirements of the methods described in SW-846 Method 7471.

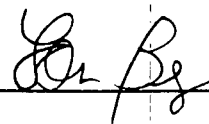
No further analytical problems were encountered.

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I certify that this data package has been reviewed for the quality control and quality assurance measures for all analyzed methodologies.



Lori Beyer  
Laboratory Director

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## METHODOLOGY SUMMARY

### AQUEOUS METHODOLOGIES:

	<u>REF1</u>	<u>REF2</u>	<u>REF3</u>	<u>REF5</u>
BNA, Pesticide/PCB's Extraction		3510/3520		
AA/ICP Sample Preparation	200.7			
Furnace Sample Preparation	200.0			
Mercury Sample Preparation	245.1			
Hexavalent Chromium Sample Preparation	218.5			
Clean-Up		3610/3620/3630/ 3640/3660		
Organochlorine Pesticide and PCB's by Gas Chromatography			608	
Herbicides by Gas Chromatography			362	
Purgeable Organics by GC/MS			624	524.2
Base Neutral, Acids by GC/MS			625	
BTEX			602	
EDB/DBCP by Microextraction				504.1

### NON-AQUEOUS METHODOLOGIES:

BNA, Pesticide/PCB's Extraction	3550
AA/ICP Sample Preparation	3050
Furnace Sample Preparation	3020/3030/3050
Mercury Sample Preparation	7471A
Clean-Up	3610/3620/3630/ 3640/3660

### GC, Gas Chromatography/Mass Spectrometry:

Purgeable Organics	8260A/8240/8021
Base/Neutral and Acid Extractables	8270A, 8270B
Organophosphorus Pesticides	8140
Organochlorine Pesticide and PCB's by Gas Chromatography	8080/8081
BTEX	8020
Halogenated Purgeable Organics	8010A
Hexavalent Chromium Sample Preparation	3060

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# METHODOLOGY SUMMARY

## INDUCTIVELY COUPLED PLASMA (ICP):

	<u>REF1</u>	<u>REF2</u>
Aluminum	200.7	6010A
Antimony	200.7	6010A
Barium	200.7	6010A
Beryllium	200.7	6010A
Cadmium	200.7	6010A
Calcium	200.7	6010A
Chromium	200.7	6010A
Cobalt	200.7	6010A
Copper	200.7	6010A
Iron	200.7	6010A
Lead	200.7	6010A
Magnesium	200.7	6010A
Manganese	200.7	6010A
Molybdenum	200.7	6010A
Nickel	200.7	6010A
Potassium	200.7	6010A
Silver	200.7	6010A
Silicon	200.7	6010A
Sodium	200.7	6010A
Tin	200.7	6010A
Titanium	200.7	6010A
Vanadium	200.7	6010A
Zinc	200.7	6010A

## Furnace AA:

Antimony	204.1	7041/6010A
Arsenic	206.2	7060/6010A
Lead	239.2	7421/6010A
Selenium	270.2	7740/6010A
Thallium	279.2	7841/6010A
Mercury (Cold Vapor AA)	245.1	7470/7471A

## ICAP:

Priority Pollutants	200.7	6010A/7060/ 7470/7740
TAL Metals	200.7	6010A/7060/ 7470/7740
RCRA Metals	200.7	6010A/7060/ 7470/7740

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## METHODOLOGY SUMMARY

### REFERENCES:

- (1) USEPA - 600/4-79-020 method for the Chemical Analysis of Water and Waste
- (2) USEPA SW846, Test Methods for Evaluating Solid Waste, Third Edition and updates
- (3) Federal Register 40 CFR Part 136, Vol. 49, No. 209 Test Parameters for the Analysis of Pollutants
- (4) Federal Register Vol. 51, No. 216 Friday, 11/07/96, pp.40643-40652
- (5) Method for Determination of Organic Compounds in Drinking Water, EPA 500/4 - 88/039, Dec 1988
- (6) Standard Method for Examination of Water and Wastewater, 18 Edition 1980

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### Method Qualifiers for Inorganics

\* **C (concentration) Qualifier** - Enter "B" if the reported value was obtained from a reading that was less than the Contract Required detection limit (CRDL) but greater than or equal to the Instrument Detection Limit (IDL). If the analyte was analyzed for, but not detected, a "U" must be entered.

\* **Q Qualifier** - Specified entries and their meanings as follows:

- E** - The reported value is estimated because of the presence of interference.
- M** - Duplicate precision not met ( CV > 20% )
- N** - Spike sample recovery not within control limits.
- S** - — The reported value was determined by Method of Standard Addition (MSA).
- W** - Post-digestion spike for Furnace AA analysis is out of control limits (85 - 115), while sample absorbance is less than 50% of spike absorbance.
- \*** - Duplicate analysis not within control limits.
- +** - Correlation Coefficient for the MSA is less than 0.995.

Entering "S", "W", or "+" is mutually exclusive.

\* **M (Method) Qualifier** - enter:

- "P" for ICP
- "A" for Flame AA
- "F" for Furnace AA
- "CV" for Cold Vapor AA
- "AV" for Automated Cold Vapor AA
- "AS" for Semi-Automated Spectrophotometric
- "C" for Manual Spectrophotometric
- "T" for Titrimetric
- "NR" if the analyte is not required to be analyzed.

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**METALS DATA**

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## ANALYTICAL DATA REPORT PACKAGE

NYTEST ENVIRONMENTAL INC.

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_  
Lab Code: NYTEST  
IContract: 9723560\_\_\_\_\_  
Login No.: 32913\_\_\_\_\_  
Report No.: RFP\_1\_

Sample No.	Lab Sample ID
PM015	291314
PM016	291315
PM017	291316
PM017D	291317D
PM017S	291318S
PM001	291301
PM002	291302
PM003	291303
PM005	291304
PM006	291305
PM007	291306
PM008	291307
PM009	291308
PM010	291309
PM011	291310
PM012	291311
PM013	291312
PM014	291313

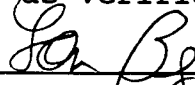
Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO\_

Comments:

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature:   
Date: 11/18/99Name: Lori Beyer  
Title: Laboratory Director

## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_ Contract: 9723560

Lab Code: NYTEST      Login No.: 32913\_

QC Report No. RFP\_1\_

Matrix (soil/water): SOIL\_

Lab Sample ID: 291301

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 81.3

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

NEI FORM 1 - (9/93)

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## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_ Contract: 9723560

Lab Code: NYTEST      Login No.: 32913

QC Report No. RFP\_1

Matrix (soil/water): SOIL

Lab Sample ID: 291302

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 84.1

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CODES :

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:

## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_ Contract: 9723560

Lab Code: NYTEST      Login No.: 32913

QC Report No. RFP\_1

Matrix (soil/water): SOIL

Lab Sample ID: 291303

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 76.3

Concentration Units (ug/L or mg/kg dry weight): MG/KG

[illegible]

CODES :

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:

## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_ Contract: 9723560

Lab Code: NYTEST      Login No.: 32913

QC Report No.RFP 1

Matrix (soil/water): SOIL

Lab Sample ID: 291304

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 83.4

Concentration Units (ug/L or mg/kg dry weight): MG/KG

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:

## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC Contract: 9723560

Lab Code: NYTEST      Login No.: 32913

QC Report No. RFP 1

Matrix (soil/water): SOIL

Lab Sample ID: 291305

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 88.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

[illegible]

CODES :

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:

NEI FORM 1 - (9/93)

000020

100082

SAMPLE NO.

PM007

QC Report No. RFP 1

Lab Sample ID: 291306  
Date Received: 11/13/97

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

SAMPLE NO.

PM008

QC Report No. RFP\_1\_

Lab Sample ID: 291307  
Date Received: 11/13/97

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

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## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_ Contract: 9723560\_\_\_\_\_

Lab Code: NYTEST      Login No.: 32913\_      QC Report No.RFP\_1\_

Matrix (soil/water): SOIL\_  
Level (low/high) : LOW  
Percent Solids : \_61.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:

## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST ENV INC

Contract: 9723560

PM010

Login No.: 32913

QC Report No.RFP 1

Matrix (soil/water): SOIL

Lab Sample ID: 291309

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 76.7

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:



## INORGANICS ANALYSIS DATA SHEET

PM011

100087

## INORGANICS ANALYSIS DATA SHEET

PM012

QC Report No. RFP 1

Lab Sample ID: 291311  
Date Received: 11/13/97

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

NEI FORM 1 - (9/93)

000026

100088

## INORGANICS ANALYSIS DATA SHEET

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_

Contract: 9723560

PM013

Login No.: 32913\_

QC Report No. RFP\_1\_

Matrix (soil/water): SOIL\_

Lab Sample ID: 291312

Level (low/high) : LOW

Date Received: 11/13/97

Percent Solids : 51.7

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

Comments:

## INORGANICS ANALYSIS DATA SHEET

PM014

QC Report No.RFP 1

Percent Solids : 73.0

## INORGANICS ANALYSIS DATA SHEET

PMO15

100091

## INORGANICS ANALYSIS DATA SHEET

PMO16

SAMPLE NO.

PMO17

QC Report No. RFP 1

Lab Sample ID: 291316  
Date Received: 11/13/97

[illegible]

P: ICP; F : GFAA; CV: Cold Vapor; AS: Automated Spectrophotometric  
Note: A "U" in the "C" (Concentration) column indicates the analyte was  
not detected in this sample; "B" = Sample value greater than Instrument  
Detection Limit, but less than reporting limit; "NR" = Not Required.

000031

100093

## INITIAL AND CONTINUING CALIBRATION VERIFICATION

Contract: 9723560

QC Report No.: RFP\_1

Continuing Calibration Source: SPEX

[illegible]



## INITIAL AND CONTINUING CALIBRATION VERIFICATION

Continuing Calibration Source: SPEX\_\_\_\_\_

## CRDL STANDARD FOR AA AND ICP

ICP CRDL Standard Source: SPEX\_\_\_\_\_

[illegible]

## ANALYTICAL AND METHOD BLANK SUMMARY

Preparation Blank Concentration Units (ug/L or mg/kg): MG/KG

100097

## ANALYTICAL AND METHOD BLANK SUMMARY

Preparation Blank Concentration Units (ug/L or mg/kg): \_\_\_\_\_

100098

## MATRIX SPIKE RECOVERY DATA SHEET

PMO17S

Contract: 9723560

Login No.: 32913

QC Report No. : RFP\_1

Level (low/med): LOW

% Solids for Sample: 77.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

Comments:

PMO17MSD

NEI FORM 6 - (9/93)

000037

100099

NYTEST ENVIRONMENTAL INC.

DUPLICATES

SAMPLE NO.

Lab Name: NYTEST\_ENV\_INC\_\_\_\_\_

Contract: 9723560

PMO17D

Lab Code: NYTEST      Login No.: 32913\_

QC Report No. : RFP\_1\_

Matrix (soil/water): SOIL\_

Level (low/med): LOW

% Solids for Sample: 77.2

% Solids for Duplicate: 77.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

[illegible]

NR : Analyte Not Requested

NEI FORM 8 - (9/93)

000038

100100

LABORATORY CONTROL SAMPLE

Aqueous LCS Source: \_\_\_\_\_

[illegible]



Roy F. Weston, Inc.  
Federal Programs Division  
Suite 201  
1090 King Georges Post Road  
Edison, New Jersey 08837-3703  
908-225-6116 • Fax 908-225-7037

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT 68-W5-0019

April 7, 1998

Ms. Irmee Huhn  
U.S. Environmental Protection Agency, Removal Action Branch  
2890 Woodbridge Avenue  
Edison, New Jersey 08837

TDD NO: 02-97-11-0004-B  
DCN NO: START-02-F-01735  
SUBJECT: SAMPLING TRIP REPORT  
PYRIDIUM MERCURY DISPOSAL SITE NO. 1,  
HARRIMAN, NEW YORK

Dear Ms. Huhn:

Enclosed please find one (1) copy of the Sampling Trip Report for the March 13 and March 25, 1998 sampling events at the above referenced site. As stated in the Sampling QA/QC Work Plan, the final report will be submitted within two (2) weeks of validation of the analytical data package. The final report shall include the following information:

1. Project/site background;
2. Project objectives;
3. Sampling scheme/strategy;
4. Sample collection (dates);
5. Project personnel and their affiliations;
6. Analytical results;
7. Site figure/map indicating sample locations;
8. Site specific QA/QC plan;
9. Discussion of analytical results.

Sincerely,

ROY F. WESTON, INC.

Michael Mahnkopf  
Project Manager

Enclosure

100102



## SAMPLING TRIP REPORT

**SITE NAME:** Pyridium Mercury Disposal Site No. 1  
DCN #: START-02-F-01735  
TDD #: 02-97-11-0004-B

**SAMPLING DATE:** March 13 and 25, 1998

**EPA I.D. NO.:** EV

1. **Site Location:** Pyridium Mercury Disposal Site No. 1  
Route 17M  
Harriman, New York  
(See Figure 1)
2. **Sample Descriptions:** Thirty-nine (39) surface and twenty-five (25) subsurface soil samples were collected from various locations throughout the Pyridium site. Twenty-two (22) surface and thirteen (13) subsurface soil samples were submitted for total mercury (Hg) analysis. Four (4) field duplicates and four (4) matrix spike/matrix spike duplicates were also submitted for Hg analysis. See Tables 1 and 2 for additional information.
3. **Laboratory Receiving Samples:**

Analysis

Name and Address of Laboratory

Total Mercury

Industrial Corrosion Management (ICM)  
1152 Route 10  
Randolph, NJ 07869  
(973) 584-0330

4. **Sample Dispatch Data:**

On March 13, 1998, a total of fifteen (15) soil samples and one (1) rinsate blank were delivered to ICM by Region II START personnel.

On March 19, 1998, a total of eleven (11) soil samples were received by ICM personnel at the Region II START office, located in Edison, New Jersey.

On March 26, 1998, a total of ten (10) soil samples and one (1) rinsate blank were received by ICM personnel at the Region II START office, located in Edison, New Jersey.

100103

On March 31, 1998, a total of seven (7) soil samples were received by ICM personnel at the Region II START office, located in Edison, New Jersey.

5. On-Site Personnel (03/13/98):

<u>Name</u>	<u>Representing</u>	<u>Duties on Site</u>
Irmee Huhn	US EPA	On-Scene Coordinator
Michael Mahnkopf	Region II START	Project Manager
Christoph Stannik	Region II START	Sample Technician
Bruce Lin	Region II START	Sample Technician

6. On-Site Personnel (03/25/98):

<u>Name</u>	<u>Representing</u>	<u>Duties on Site</u>
Irmee Huhn	US EPA	On-Scene Coordinator
Adly Michael	Region II START	Sample Technician
Brian McGinn	Region II START	Sample Technician

7. Additional Comments:

On March 13, 1998, START collected thirty one (31) surface (0-3") soil samples and eleven (11) subsurface soil samples from locations identified by the OSC throughout the Pyridium site. Two (2) field duplicates, two (2) matrix spike/matrix spike duplicates, and one (1) rinsate blank were also collected. Surface samples were collected with dedicated plastic scoops and/or spatulas. Subsurface soil samples were collected with non-dedicated stainless steel hand augers.

Eleven (11) of the thirty-one (31) surface soil samples, two (2) field duplicates, two (2) matrix spike/matrix spike duplicates, and one (1) rinsate blank were submitted to ICM for total Hg analysis on March 13, 1998. Based upon the results of the samples submitted on March 13, 1998, an additional six (6) surface and five (5) subsurface soil samples were submitted to ICM for total Hg analysis on March 19, 1998.

START also collected three (3) composite soil samples which were generated from grab samples collected from locations identified by the OSC as follows:

Comp. No. 1

Former sample location PM 013;  
Sample location I3 (18-24");  
Sample location I4A (6-9").

Comp. No. 2

Sinkhole at D150;  
Sample location M2 (24-30");  
Sample location K2 (6-12").

Comp. No. 3

Sinkhole at D150;  
Sinkhole at E3.

The three (3) composites were representative of the Hg contaminated waste material encountered on-site. The subject samples were delivered to Westinghouse Remediation Services, Inc. for waste disposal analysis.

On March 25, 1998, START collected eight (8) surface (0-3") soil samples and fourteen (14) subsurface soil samples from locations identified by the OSC throughout the Pyridium site. Five (5) field duplicates, five (5) matrix spike/matrix spike duplicates, and one (1) rinsate blank were also collected. Surface soil samples were collected with dedicated plastic scoops and/or spatulas. Subsurface soil samples were collected with non-dedicated stainless steel hand augers.

Four (4) of the eight (8) surface soil samples, four (4) of the fourteen (14) subsurface soil samples, one (1) field duplicate, one (1) matrix spike/matrix spike duplicate, and one (1) rinsate blank were submitted to ICM for total Hg analysis on March 26, 1998.

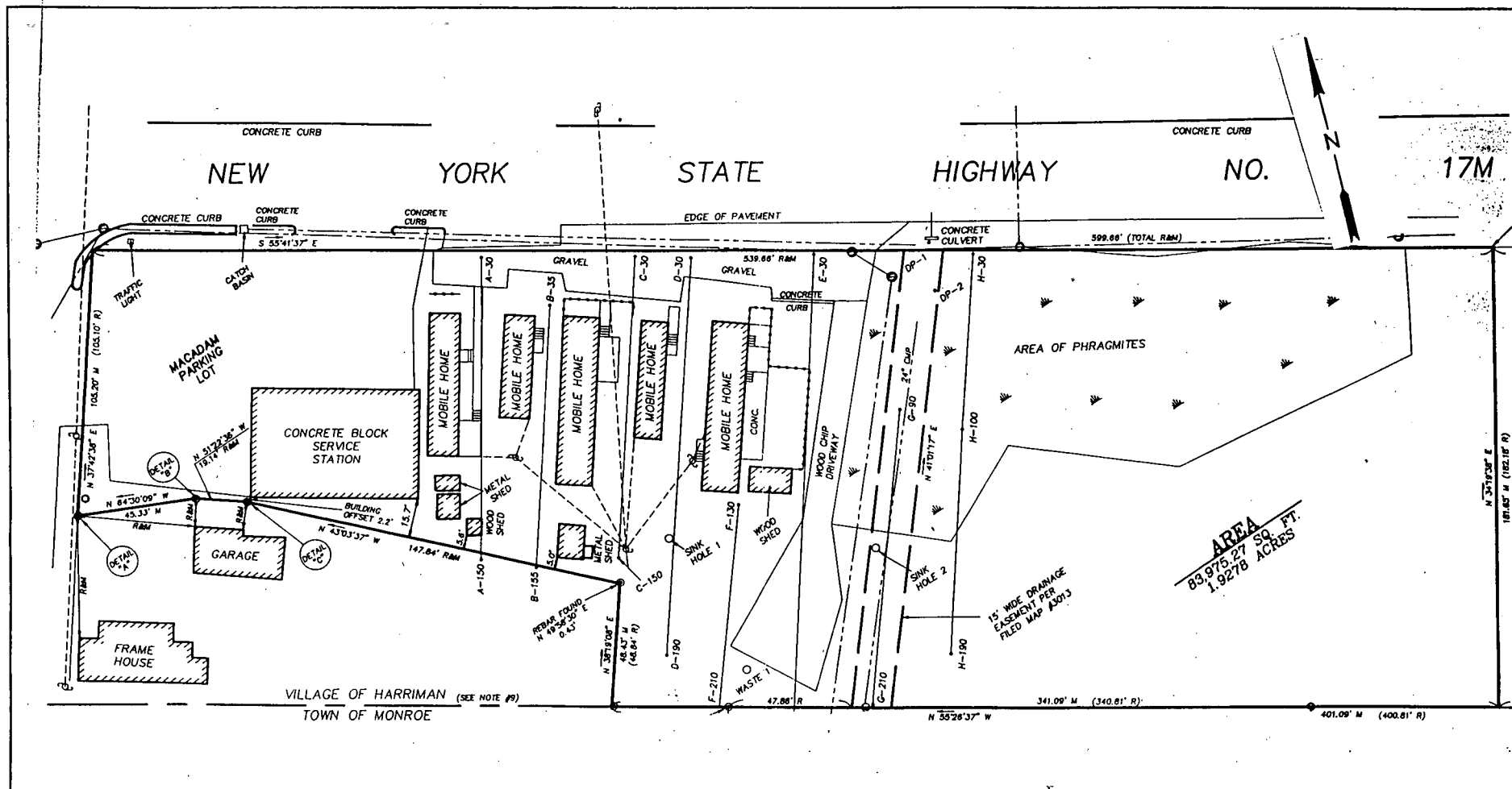
Based upon the results of the samples submitted on March 26, 1998, an additional one (1) surface soil sample, four (4) subsurface soil samples, one (1) field duplicate, and one (1) matrix spike/matrix spike duplicate were submitted to ICM for total Hg analysis on March 31, 1998.

Enclosed as Attachment A are copies of the chain of custody forms.

Sampling equipment decontamination was performed in accordance with the procedures outlined in the Sampling Equipment Decontamination EPA/ERT SOP #2006. EPA/ERT SOP #2006 was included as Attachment B of the Sampling QA/QC Work Plan for the Pyridium site (DCN: START-02-F-01679).

8. Report prepared by: Michael Mahnkopf *M.M.* Date: April 7, 1998
9. Report reviewed by: Thomas O'Neill *TO* Date: April 7, 1998

100105



**Roy F. Weston, Inc.**  
FEDERAL PROGRAMS DIVISION

IN ASSOCIATION WITH RESOURCE APPLICATION, Inc.  
C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES,  
PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.

EPA PM

I. HUHN

START PM

M. MAHNKOPF

FIGURE 1

SITE MAP

SITE PYRIDIUM MERCURY  
DISPOSAL NO. 1

100106

**TABLE 1**

**PYRIDIUM MERCURY DISPOSAL SITE NO. 1  
HARRIMAN, NEW YORK  
SAMPLING & ANALYSIS**

**MARCH 13, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
A1	Soil	0-3"	03/13/98 0900 hrs	Not analyzed	Brown silt/sand with small amt. of gravel
B1	Soil	0-3"	03/13/98 0910 hrs	Not analyzed	Same as above with increased amt. of gravel
A2	Soil	0-3"	03/13/98 0915 hrs	Total Hg	Brown silt/sand with small amt. of gravel
B2	Soil	0-3"	03/13/98 0915 hrs	Total Hg	Same as above
B3	Soil	0-3"	03/13/98 0920 hrs	Total Hg	Black/brown silt/sand
A3	Soil	0-3"	03/13/98 0920 hrs	Not analyzed	Same as above
E3A	Soil	0-3"	03/13/98 0935 hrs	Total Hg	Same as above
F3A	Soil	0-3"	03/13/98 0940 hrs	Total Hg	Same as above
I4A	Soil	0-3"	03/13/98 0955 hrs	Not analyzed	Black/brown silt
I4	Soil	0-3"	03/13/98 0955 hrs	Not analyzed	Brown silt/sand with gravel
M4A	Soil	0-3"	03/13/98 1005 hrs	Total Hg	Black silt/organic matter
N4	Soil	0-3"	03/13/98 1015 hrs	Not analyzed	Brown silt/sand with gravel

100107

**TABLE 1**  
**PYRIDIUM MERCURY DISPOSAL SITE NO. 1**  
**HARRIMAN, NEW YORK**  
**SAMPLING & ANALYSIS**

**MARCH 13, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
O4	Soil	0-3"	03/13/98 1025 hrs	Not analyzed	Brown silt/sand with gravel
Q3	Soil	0-3"	03/13/98 1035 hrs	Total Hg	Brown silt
P3	Soil	0-3"	03/13/98 1035 hrs	Not analyzed	Same as above
R3	Soil	0-3"	03/13/98 1045 hrs	Total Hg	Brown silt/sand
R2	Soil	0-3"	03/13/98 1045 hrs	Total Hg	Brown silt, decayed organic material
Q2	Soil	0-3"	03/13/98 1050 hrs	Total Hg	Brown silt
P2	Soil	0-3"	03/13/98 1050 hrs	Total Hg	Brown silt/sand with low amt. of gravel
R1	Soil	0-3"	03/13/98 1105 hrs	Not analyzed	Brown silt/sand with high amt. of gravel
Q1	Soil	0-3"	03/13/98 1110 hrs	Total Hg	Brown silt/sand with gravel
P1	Soil	0-3"	03/13/98 1115 hrs	Total Hg	Black silt/sand/clay mix
B2-1	Soil	0-3"	03/13/98 0915 hrs	Total Hg	Duplicate of B2
B3 MS/MSD	Soil	0-3"	03/13/98 0920 hrs	Total Hg	Matrix spike/matrix spike duplicate

100108

**TABLE 1**  
**PYRIDIUM MERCURY DISPOSAL SITE NO. 1**  
**HARRIMAN, NEW YORK**  
**SAMPLING & ANALYSIS**

**MARCH 13, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
C3	Soil	0-3"	03/13/98 1230 hrs	Total Hg	Brown silt/sand with small amt. of gravel
C2	Soil	0-3"	03/13/98 1255 hrs	Not analyzed	Brown silt/sand with gravel and white, chalky material
I4B	Soil	0-3"	03/13/98 1350 hrs	Total Hg	Brown silt/sand
AA1	Soil	0-3"	03/13/98 1415 hrs	Not analyzed	Black/brown silt
B2-D	Soil	18-24"	03/13/98 1455 hrs	Not analyzed	Brown silt/sand/clay mix
B3-D	Soil	18-24"	03/13/98 1510 hrs	Not analyzed	Brown silt/sand/clay mix with gravel
E3A-D	Soil	18-24"	03/13/98 1525 hrs	Not analyzed	Brown/silt/sand/clay mix with gravel
I4B-D	Soil	18-24"	03/13/98 1530 hrs	Not analyzed	Brown silt/clay with small amt. of gravel
M4A-D	Soil	18-24"	03/13/98 1540 hrs	Total Hg	Same as above
AB1	Soil	0-3"	03/13/98 1605 hrs	Total Hg	Brown silt/sand
AB1-D	Soil	18-24"	03/13/98 1610 hrs	Total Hg	Same as above
AB1-1	Soil	0-3"	03/13/98 1605 hrs	Total Hg	Duplicate of AB1

100109

**TABLE 1**

**PYRIDIUM MERCURY DISPOSAL SITE NO. 1  
HARRIMAN, NEW YORK  
SAMPLING & ANALYSIS**

**MARCH 13, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
AB1 MS/MSD	Soil	0-3"	03/13/98 1605 hrs	Total Hg	Matrix spike/matrix spike duplicate
Q1-D	Soil	12-18"	03/13/98 1700 hrs	Total Hg	Brown silt
P2-D	Soil	12-15"	03/13/98 1655 hrs	Not analyzed	Brown silt/sand/clay mix
Q3A-D	Soil	18-24"	03/13/98 1620 hrs	Total Hg	Same as above
Q3-D	Soil	18-22"	03/13/98 1645 hrs	Total Hg	Brown soil with small amt. of sand
Q3A	Soil	0-3"	03/13/98 1620 hrs	Total Hg	Brown silt/sand
Q4	Soil	0-3"	03/13/98 1625 hrs	Total Hg	Brown silt/sand
Q4-D	Soil	18-24"	03/13/98 1630 hrs	Total Hg	Brown silt/sand
R3A	Soil	0-3"	03/13/98 1650 hrs	Not analyzed	Brown soil with small amt. of sand
P3A	Soil	0-3"	03/13/98 1655 hrs	Not analyzed	Brown silt
FB-1	Aqueous	N/A	03/13/98 1130 hrs	Total Hg	Field/Rinsate blank

100110



**TABLE 2**

**PYRIDIUM MERCURY DISPOSAL SITE NO. 1  
HARRIMAN, NEW YORK  
SAMPLING & ANALYSIS**

**MARCH 25, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
AA2	Soil	0-3"	03/25/98 1000 hrs	Total Hg	Brown silt/sand
AA2 MS/MSD	Soil	0-3"	03/25/98 1000 hrs	Total Hg	Matrix spike/matrix spike duplicate
AA2-1	Soil	0-3"	03/25/98 1600 hrs	Total Hg	Duplicate of AA2
AA2-D	Soil	18-24"	03/25/98 1010 hrs	Not analyzed	Brown silt/sand
AB2	Soil	0-3"	03/25/98 1000 hrs	Total Hg	Same as above
C3-D	Soil	18-24"	03/25/98 1028 hrs	Total Hg	Brown clay with gravel, wet
D3-D	Soil	18-24"	03/25/98 1030 hrs	Not analyzed	white, clay-like material
E3-D	Soil	18-24"	03/25/98 1530 hrs	Not analyzed	white, clay-like material
F3A-D	Soil	18-24"	03/25/98 1106 hrs	Total Hg	Same as above
I4C	Soil	0-3"	03/25/98 1107 hrs	Total Hg	Same as above
I4C-D	Soil	18-24"	03/25/98 1110 hrs	Total Hg	Same as above
I4C-D MS/MSD	Soil	18-24"	03/25/98 1110 hrs	Total Hg	Matrix spike/matrix spike duplicate

100111

**TABLE 2**  
**PYRIDIUM MERCURY DISPOSAL SITE NO. 1**  
**HARRIMAN, NEW YORK**  
**SAMPLING & ANALYSIS**

**MARCH 25, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
I4C-D-1	Soil	18-24"	03/25/98 1140 hrs	Total Hg	Duplicate of I4C-D
I4D	Soil	0-3"	03/25/98 1125 hrs	Not analyzed	Brown silt/sand with gravel
I4D MS/MSD	Soil	0-3"	03/25/98 1125 hrs	Not analyzed	Matrix spike/matrix spike duplicate
I4D-1	Soil	0-3"	03/25/98 1125 hrs	Not analyzed	Duplicate of I4D
R3-D	Soil	15-18"	03/25/98 1400 hrs	Total Hg	Brown silt/sand/clay mix
S3-D	Soil	16-18"	03/25/98 1430 hrs	Not analyzed	Brown silt/sand, wet
S3-D MS/MSD	Soil	16-18"	03/25/98 1430 hrs	Not analyzed	Matrix spike/matrix spike duplicate
S3-D-1	Soil	16-18"	03/25/98 1430 hrs	Not analyzed	Duplicate of S3-D
R2-D	Soil	3-6"	03/25/98 1500 hrs	Total Hg	Brown silt/sand, wet
S2	Soil	0-3"	03/25/98 1515 hrs	Not analyzed	Brown silt/sand
S2-D	Soil	11-14"	03/25/98 1515 hrs	Not analyzed	Brown silt/sand, wet
S2-D MS/MSD	Soil	11-14"	03/25/98 1515 hrs	Not analyzed	Matrix spike/matrix spike duplicate

100112

**TABLE 2**

**PYRIDIUM MERCURY DISPOSAL SITE NO. 1  
HARRIMAN, NEW YORK  
SAMPLING & ANALYSIS**

**MARCH 25, 1998**

<b>SAMPLE ID</b>	<b>MATRIX</b>	<b>DEPTH</b>	<b>DATE/ TIME</b>	<b>ANALYSIS</b>	<b>DESCRIPTION</b>
S2-D-1	Soil	11-14"	03/25/98 1515 hrs	Not analyzed	Duplicate of S2-D
P1-D	Soil	9-12"	03/25/98 1330 hrs	Total Hg	Brown sand with gravel, wet
AB2-D	Soil	18-24"	03/25/98 1530 hrs	Not analyzed	Brown/grey
T4	Soil	0-3"	03/25/98 1353 hrs	Total Hg	Brown silt/sand
T4-D	Soil	18-24"	03/25/98 1403 hrs	Total Hg	Brown clay
U4	Soil	0-3"	03/25/98 1353 hrs	Not analyzed	Brown silt/sand
U4-D	Soil	18-24"	03/25/98 1403 hrs	Not analyzed	Brown clay
S3	Soil	0-3"	03/25/98 1430 hrs	Not analyzed	Brown silt/sand
RB-1	Aqueous	N/A	03/25/98 0915 hrs	Total Hg	Field/Rinsate Blank

100113

**ATTACHMENT A**

**CHAIN OF CUSTODY FORMS**

**100114**

EP No.:

0477

D No.:

91064

## CHAIN OF CUSTODY RECORD



SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM

EPA CONTRACT 68-W5-0019

Phone: 908-225-5116 Fax: 908-225-7057

1. Surface Water
2. Ground Water
3. Leachate
4. Rinsets
5. Soil/Sediment
6. Oil
7. Waste
8. Other (Specify)

1. HCl
2. HNO3
3. Na2SO4
4. H2SO4
5. Other (Specify)
6. Ice Only
7. Not Preserved
8. See Comments

and verbal and written results to:

Roy F. Weston, Inc., USEPA Region II START

Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703

Attention: Smita Samdai, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	RCRA ANALYSIS						RCRA ANALYSIS			OTHER
						VOA	ICMA	PCB	PCB	ICMA	ICMA	ICMA	ICMA	ICMA	
B2	3/13/98 0915	5	4m	G	6										TOTAL Hg
B2-1	0915														
B3	0920														
B3 <sup>MS</sup> MS12	0920														
E3A	0935														
M4A	1005														
Q3	1035														
Q1	1110														
P2	1050														
I4B	1350														
AB1	1605														

Comments:

B3 MS/MSD

Person Assuming Responsibility for Sample:

M. Mahoney

Time

Date (MM/DD/YY)

1550

3/13/98

Sample Number

Relinquished By:

Time

Date

Received By:

Reason for Change of Custody

ALL

M. Mahoney

19:00

3-13-98

C. And

Transfer to Lab

Sample Number

Relinquished By:

Time

Date

Received By:

Reason for Change of Custody

Sample Number

Relinquished By:

Time

Date

Received By:

Reason for Change of Custody

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

In Association with Resource Applications, Inc., R.E. Serrano Associates, PRC Environmental Management, C.C. Johnson &amp; Malhotra, P.C., and GRB Environmental Services, Inc.

100115

REF No.:  
2477  
PO No.:  
91064

# CHAIN OF CUSTODY RECORD

**WESTON**  
MANAGERS DESIGN/CONSULTANTS

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT 68-W5-0019  
Phone: 908-225-5116 Fax: 908-225-7037

Matrix Box No.:  
Preservative Box No.:

1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinaste	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	7. Not Preserved
8. Other (Specify)	8. See Comments

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START  
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-5703  
Attention: Smita Samdary, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	EPA ANALYSIS					RCRA ANALYSIS			OTHER	
						VOA	ENR	PEST	PCB	TAL	CY	KN	COR		REAC
ABI-1	3/13/98	1605	S	4m	G	6									Total Hg
ABI <sup>MS</sup> MSD		1605	↓	↓	↓	↓									↓
Q3A		1620	↓	↓	↓	↓									↓
Q4		1625	↓	↓	↓	↓									↓
FB-1		1130	4	↓	↓	2									↓

Comments: ABI MS/MSD

Person Assuming Responsibility for Sample: M. Mahoney  
Time: 1550 Date (MM/DD/YY): 3/13/98

Sample Number: ALL Reinquished By: M. Mahoney Time: 19:00 Date: 3-13-98 Received By: C. And Reason for Change of Custody: Transfer To Lab

Sample Number: Reinquished By: Time: Date: Received By: Reason for Change of Custody:

Sample Number: Reinquished By: Time: Date: Received By: Reason for Change of Custody:

R No.: 2477  
P No.: 91064

# CHAIN OF CUSTODY RECORD



SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT 68-W5-0019  
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:	Preservative Box No.:
1. Surface Water	1. HCl
2. Ground Water	2. HN03
3. Leachate	3. Na2SO4
4. Rinseate	4. H2SO4
5. Soil/Sediment	5. Other (Specify)
6. Oil	6. Ice Only
7. Waste	N. Not Preserved
8. Other (Specify)	* See Comments

Send verbal and written results to: Roy F. Weston, Inc., USEPA Region II START  
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703  
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #)	EPA ANALYSIS					RCRA ANALYSIS			OTHER	
						VOA	ENR	PEST	PCBs	TAL	CN	KEN	COE		REAC
AB-10															
AD-10	3/13/98 1610	5	L	G	6										H6 ONLY
12	3/13/98 0915	5	L	G	6										
13	3/13/98 1250	5	L	G	6										
13A	3/13/98 0940	5	L	G	6										
4A-D	3/13/98 1340	5	L	G	6										
Q4-D	3/13/98 1630	5	L	G	6										
3A-D	3/13/98 1620	5	L	G	6										
3-D	3/13/98 1645	5	L	G	6										
Q2	3/13/98 1050	5	L	G	6										
71	3/13/98 1115	5	L	G	6										
R2	3/13/98 1045	5	L	G	6										

Comments: MS/MSD - USE SAMPLE SUPPLIED W/ SHIPMENT DELIVERED 3/13/98  
OR SELECT ANY OF TODAY'S SAMPLES

Person Assuming Responsibility for Sample:						Time	Date	Received By:	Reason for Change of Custody
CHRISTOPH STANNICK, START						3/13/98	16:30	I. HUNN, EPA	SAMPLE STORAGE
Sample Number						Time	Date	Received By:	Reason for Change of Custody
ALL						3/13/98	16:30	I. HUNN	SAMPLE STORAGE
Sample Number						Time	Date	Received By:	Reason for Change of Custody
ALL						3/19/98	13:30	C. STANNICK	TRANSFER TO LAB
Sample Number						Time	Date	Received By:	Reason for Change of Custody
ALL						3/19/98	1435	JAMES BARBER	TRANSFER TO LAB

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental

Management, C.C. Johnson & McElroy, P.C., and GDR Environmental Services, Inc.

100117

RFP No.:

2477

PO No.:

91064

## CHAIN OF CUSTODY RECORD



SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM  
EPA CONTRACT 68-W5-0019  
Phone: 908-225-6116 Fax: 908-225-7037

Matrix Box No.:

1. Surface Water
2. Ground Water
3. Leachate
4. Rinsate
5. Soil/Sediment
6. Oil
7. Waste
8. Other (Specify)

Preservative Box No.:

1. HCl
2. HN03
3. Na2SO4
4. H2SO4
5. Other (Specify)
6. Ice Only
- N. Not Preserved
- \* See Comments

Send verbal and written results to:

Roy F. Weston, Inc., USEPA Region II START  
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703  
Attention: Smita Sumbaly, START Analytical Coordinator

Sample Number	Sample Collection MM/DD/YY/Time	Sample Matrix (Enter box #)	Conc. Low-L Med-M High-H	Sample Type Comp-C Grab-G	Sample Preserv. (Enter box #s)	RAS ANALYSIS					RCRA ANALYSIS				OTHER
						VOA	BNA	PEST	PCBs	TAL	CN	IGN	COR	REAC	
AA2	3/25/98/1000	6	M/L	G	6										Hg.
AA2-1	3/25/98/1600	6	M/L		6										
C3D	3/25/98/1028	6	M/L		6										
F3A-D	3/25/98/1104	6	M/L		6										
I4C	3/25/98/1107	6	M/L		6										
T4	3/25/98/1353	6	M/L		6										
R3	3/13/98/1045	6	M/L		6										
R2-D	3/25/98/1500	6	M/L		6										
P1-D	3/25/98/1330	6	M/L		6										
RB-1	3/25/98/	4	L	C	6										

Comments:

AA2 - MS/MSD (2 jars) . AM

Person Assuming Responsibility for Sample:

Adly Michael

Time Date (MM/DD/YY)

3/25/98=1700

Sample Number

Relinquished By:

Time

Date

Received By:

Reason for Change of Custody

All

Adly Michael

0830

3/26/98

Smita

Sample Number

Relinquished By:

Time

Date

Received By:

Reason for Change of Custody

Sample Number

Relinquished By:

Time

Date

Received By:

Reason for Change of Custody

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental  
Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

100118



91064

**WESTON.**  
MADE IN THE U.S.A. BY WESTON TOOL & DIE CO. INC.

**SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM**  
**EPA CONTRACT 68-W5-0019**  
**Phone: 908-225-6116 Fax: 908-225-7037**

Preservative Box No.:

1. HCl
2. HNO<sub>3</sub>
3. Na<sub>2</sub>SO<sub>4</sub>
4. H<sub>2</sub>SO<sub>4</sub>
5. Other (Specify)
6. Ice Only

\* Not Preserved  
\* See Comments

Roy F. Weston, Inc., USEPA Region II START  
Suite 201, 1090 King Georges Post Road, Edison, New Jersey 08837-3703  
Attention: Smita Sumbaly, START Analytical Coordinator

Comments:

Extra volume (2 jars) of sample # I4C-D for MS/MSD analysis. And

Person Assuming Responsibility for Sample:

Time Date (MM/DD/YY)

Adby Michael

Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
All	Adby Michael	1603	3/31/98	J. L. L.	Analysis
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody
Sample Number	Relinquished By:	Time	Date	Received By:	Reason for Change of Custody

Roy F. Weston, Inc.

FEDERAL PROGRAMS DIVISION

In Association with Resource Applications, Inc., R.E. Sarriera Associates, PRC Environmental Management, C.C. Johnson & Malhotra, P.C., and GRB Environmental Services, Inc.

100119



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2

290 BROADWAY

NEW YORK, NY 10007-1866

MAR - 6 1998

**ACTION MEMORANDUM**

**DATE:**

**SUBJECT:** Request for a Removal Action Restart and Ceiling Increase for the Pyridium Mercury Disposal Site No. 1, Village of Harriman, Orange County, New York

**FROM:** Irmgard P. Huhn, On-Scene Coordinator  
Removal Action Branch

**TO:** Jeanne M. Fox  
Regional Administrator

**THRU:** Richard L. Caspe, Director  
Emergency and Remedial Response Division

Site No.: EV

**I. PURPOSE**

The purpose of this Action Memorandum is to request and document approval of the removal action restart and ceiling increase proposed herein for the Pyridium Mercury Disposal Site No. 1 (Site), Village of Harriman, Orange County, New York, 10926. The Site is not on the National Priorities List (NPL) and there are no nationally significant precedent-setting issues associated with the proposed removal action. A 12-month exemption and ceiling increase was obtained in the Action Memorandum signed September 26, 1997. The Site continues to meet the criteria for a 12-month exemption.

The Site consists of a residential/commercial property which was backfilled with mercury contaminated industrial waste. Five mobile home trailers, used for residential purposes, formerly occupied the Site. An Administrative Order on Consent (AOC) was issued to Nepera, Inc. and executed by the U.S. Environmental Protection Agency (EPA) on November 28, 1994. Under

200001

the AOC, Nepera Inc. agreed to assist with the relocation of residents in the mobile home trailer park. Following Nepera's completion of the relocation activities, EPA initiated an interim removal action under verbal authorization, to decontaminate and/or dispose of the five mobile home trailers.

On September 25, 1997, an Action Memorandum was approved which authorized site work involving installation and/or repair of security fencing and installation of drainage controls to minimize off-site migration of mercury contaminated soil via surface water runoff.

Activities proposed in this Action Memorandum focus on the excavation and disposal of the contaminated soil. The Site now includes both the residential/commercial property mentioned above as well as that portion of wetlands which is contaminated with mercury in excess of the cleanup level established in Section V below.

The Site meets the criteria for a removal action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as described in Section 300.415 of the National Contingency Plan (NCP). The funding necessary to mitigate the threats associated with the Site is \$1,268,500, of which \$926,400 is from the Regional removal allocation. These costs, added to the costs for the initial removal actions (\$71,000 and \$86,800), bring the total project cost to \$1,426,300, of which \$1,028,400 is for mitigation contracting.

## **II. SITE CONDITIONS AND BACKGROUND**

The Comprehensive Environmental Response, Compensation and Liability Information System ID Number for the Site is NY0000856237. The activities proposed in this Action Memorandum will be the fourth removal action undertaken at the Site. The first action was initiated in November 1994, by Nepera, Inc. to permanently relocate the residents. This action was conducted under an AOC. The second removal action was initiated by EPA on January 9, 1995, upon verbal authorization from the Division Director, to address the decontamination and sale, or dismantling and disposal of the five trailers on the Site. Additionally, a fence was installed around the Site to reduce the public's risk of direct contact with hazardous substances. The removal action was completed on April 7, 1995. The third removal action was initiated on September 30, 1997 to repair existing fencing or install new fencing on the property perimeter and implement on-site drainage controls to minimize the migration of mercury contamination off-site.

The actions proposed in this Action Memorandum are necessary to continue site activities to address the threats associated with mercury contaminated soil on the Site. The activities proposed involve excavation, stockpiling and disposal of contaminated soil, post excavation sampling and site restoration. Implementation of these activities will eliminate the threats to public health and the environment associated with the Site.

## **A. Site Description**

### **1. Removal site evaluation**

On August 8, 1994, the New York State Department of Health (NYSDOH) and New York State Department of Environmental Conservation (NYSDEC) discovered a white, clay-like substance during an investigation of a complaint from the owner of a transmission shop located adjacent to the Site. The NYSDEC and NYSDOH collected samples of the waste material for laboratory analysis. Analysis of the samples revealed elevated concentrations of mercury (maximum concentration of 653 mg/kg). Mercury is typically found in soils in this geographic location at levels of less than one mg/kg. This waste is a designated CERCLA hazardous substance and is listed in 40 CFR Table 302.4.

A letter dated September 9, 1994, from the NYSDOH, outlined site conditions and requested that the NYSDEC seek assistance from the EPA in addressing the site-imposed threats to public health, welfare and the environment. The Site was formally referred to EPA for CERCLA removal action consideration by the NYSDEC on September 29, 1994. The referral letter is included in Attachment A, Appendix A.

From October 13 thru 15, 1994, EPA and the Technical Assistance Team (TAT) performed a preliminary assessment (PA) at the Site. The PA included verification of mercury contamination and delineation of the horizontal extent of contamination in surface soils. A total of 54 surface soil samples were analyzed using a Spectrace Model 9000 X-Ray Fluorescence Analyzer (XRF). XRF field screening results identified widespread mercury contamination of the trailer park surface soils. The area of surface contamination was initially estimated to encompass 15,000 square feet.

On October 20, 1994, one composite waste sample was collected by EPA for waste characterization and mercury speciation. For the purpose of waste characterization, the sample was analyzed for Target Compound List (TCL) parameters, Target Analyte List (TAL) parameters and toxicity via the Toxicity Characteristic Leachate Procedure (TCLP). TAL analysis detected concentrations of mercury above 25 ppm, which is the cleanup level recommended by the Agency for Toxic Substances and Disease Registry (ATSDR) (see Attachment B). TCL compounds detected in the waste sample include: methylene chloride, pyrene, phenanthrene, fluoranthene, benzo(k)fluoranthene, benzo(b)fluoranthene, benzo(a)anthracene, chrysene and benzo(a)pyrene. However, these organic compound concentrations are below NYSDEC-recommended soil cleanup objectives. The TCLP results are below the Resource Conservation and Recovery Act (RCRA) regulatory levels for hazardous waste classification. Mercury speciation results indicate that the sample is a chemical substrate contaminated with a mercuric or mercurous salt, not elemental mercury.

On November 17, 1994, the EPA Environmental Response Team (ERT) and the Response Engineering and Analytical Contractor (REAC) collected dust samples from each of the on-site

mobile homes. Analytical results of the sampling event indicate mercury concentrations ranging from 0.84 mg/kg to 26.8 mg/kg; the highest concentration of mercury was detected at the entrance area in mobile home No. 3.

On December 6, 1994, ERT, REAC and TAT collected soil samples from borings to determine the vertical extent of contamination. Soil samples were screened using an XRF for the presence of mercury. Based on XRF data, it is estimated that 4,000 cubic yards of waste and contaminated soil exist on-site.

## **2. Physical location**

The Site is located in a mixed residential/commercial area at the intersection of Route 17M and local Route 71 (Harriman Heights Road) (Attachment A, Appendix B, Figure 1). The property (Block No. 5: Lot No. 2) is bordered on the northwest by an auto transmission shop, on the northeast by Route 17M, on the southeast by wetlands and on the southwest by residential properties. (The wetlands are not formally designated as such on the corresponding U.S. Department of the Interior National Wetland Inventory Map). Five mobile homes were located in the trailer park. Approximately 16 people resided in the mobile homes which vary in size from 400 to 900 square feet. An elementary school is located approximately 1,000 feet north of the Site.

## **3. Site characteristics**

The residential/commercial property encompasses 1.93 acres. The contaminated portion of the residential/commercial property occupies approximately only one acre of the total property area (Attachment A, Appendix B, Figure 2). The Site also includes that portion of the wetlands adjacent to the residential/commercial property which is contaminated with mercury in excess of the cleanup levels established in Section V below. On-site contamination is reportedly from the disposal of mercury-contaminated industrial waste generated by the Pyridium Corporation. Disposal of the waste occurred during the 1940's when the material was used to fill in low-lying areas of the property.

Field investigations indicate that approximately 4,000 cubic yards of waste and contaminated soil are present on the Site.

## **4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant**

Mercury is a CERCLA-designated hazardous substance, as defined by Section 101(14). The mercury contaminated waste is visible in surface soils and has been identified in subsurface soils. Site investigations determined that approximately 4,000 cubic yards of waste is present on-site. The waste is unconfined and has migrated from the residential/commercial property into an adjacent wetlands from surface water run off. The security fence surrounding the Site is in

disrepair permitting access to the property. Since the waste is present in surface soils, there is the potential for direct contact with the waste and for the waste to be tracked off-site by humans and animals visiting the Site.

Additionally, a drainage culvert in the wetland area carries water from the Site to a creek located northeast of State route 17M which is directly across from the Site. Laboratory analysis of sediment samples collected downstream of the culvert indicate that the waste is migrating from the Site.

## **5. NPL status**

The Site is not listed on the NPL. The Site has been evaluated by the ATSDR. The health consultation is included in Attachment A, Appendix C.

## **6. Maps, pictures and other graphic representations**

Figures 1 and 2, which are included in Attachment A, Appendix B, illustrate the location and configuration of the Site.

### **B. Other Actions to Date**

#### **1. Previous actions**

On October 12, 1994, a public meeting was held in the Village of Harriman to discuss site conditions, present the laboratory results of the August 8, 1994 sampling event and to address community concerns. The meeting was attended by representatives of the Village of Harriman, Orange County Department of Health, NYSDOH, NYSDEC, ATSDR and EPA.

On November 28, 1994, a public availability session was held in the Village of Harriman. The session was attended by representatives of NYSDOH, ATSDR and EPA. Laboratory results of the October 1994 sampling events were made available to the public in addition to discussions on future site specific actions to be performed by NYSDOH, EPA and Nepera, Inc.

On November 28, 1994, Nepera, Inc. signed an AOC with EPA agreeing to fund the relocation of the residents of the trailer park. Nepera initiated relocation settlements to the eligible residents according to federal relocation guidelines.

In December 1994, a Draft Health Consultation Report was prepared by the NYSDOH under a cooperative agreement with the ATSDR. This was finalized on August 28, 1995 and is included as Attachment A, Appendix C. The report states that the Pyridium Site is a public health hazard due to elevated mercury concentrations in soils.

On January 9, 1995, under verbal authorization, EPA mobilized the Emergency Response Cleanup Service contractor (ERCS) and TAT to begin site removal activities. As residents were relocated (in accordance with the AOC), the mobile homes were decontaminated and sold or demolished and disposed of. Prior to the sale of two of the mobile homes, the interiors were decontaminated via removal of all porous materials (carpets, curtains, furniture), cleaning of all hard surface areas and dusting of all duct work. Following decontamination, samples were collected to verify attainment of acceptable interior cleanup levels. The three mobile homes not sold were dismantled on-site and discarded as debris. All utilities (water, sewer, electric) were disconnected and all heating oil and propane storage tanks were removed for disposal/recycle. To minimize unauthorized access to the Site, a five foot fence was installed with warning signs along the northeastern boundary of the property and snow fence was placed around the remainder of the site perimeter. The removal activities were completed on April 7, 1995. The total project ceiling for this action was \$100,000.

Site stabilization activities were authorized in the ceiling increase and 12-month exemption Action Memorandum signed on September 25, 1997. Site activities included the identification of property boundaries by a licensed surveyor, delineation soil sampling and meeting with subcontractors to obtain price quotations for the installation of security fence. The stabilization actions proposed in the September 25, 1997 Action Memorandum will not be needed because these health threats will be eliminated through the proposed action.

## **2. Current actions**

EPA is continuing site investigations to delineate the horizontal and vertical extent of mercury contamination. These investigations involve collection of surface and subsurface soil samples to establish precise excavation removal limits. The information will be incorporated into the work plan for the removal activities proposed in this Action Memorandum.

## **C. State and Local Authorities' Roles**

### **1. State and local actions to date**

In August 1994, the NYSDEC and the NYSDOH conducted preliminary investigations at the Site. These investigations involved the collection of soil samples from visibly contaminated areas, sampling indoor and outdoor air, utilizing a mercury vapor analyzer and meeting with the affected residents to discuss public health concerns. During the month of October 1994, the NYSDOH conducted urine mercury screening of the residents residing in the mobile homes. A total of 14 individuals participated in the testing program. All 14 individuals had urine mercury levels within the normal range, below 20 micrograms per liter.

## **2. Potential for continued State/local response**

State and local government agencies are not able to undertake timely and costly response actions to eliminate the threats posed by the Site. Both branches of government will provide support services to EPA as the threats on-site are addressed.

## **III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES**

The Site meets the criteria for a removal action under CERCLA as described in Section 300.415(b)(2) of the NCP. The Site poses a health threat to local residents and animals that could come in direct contact with the hazardous substance at the Site. The conditions at the Site continue to meet the 12-month exemption criteria authorized by the deputy Regional Administrator on September 25, 1997.

### **A. Threats to Public Health or Welfare**

The presence of mercury, a CERCLA-designated hazardous substance, at elevated concentrations, has been documented in surface and subsurface soils. Laboratory results of eleven surface soil samples analyzed by Cold Vapor Atomic Absorption identified mercury at concentrations ranging from 0.643 mg/kg to 657 mg/kg. Toxicological data regarding mercury exposure documents the risk of potential kidney and neurological system damage.

The security fence installed during the 1994 removal action is in disrepair. This condition permits the Site to be accessed by unauthorized persons who would come in direct contact with the mercury waste. Furthermore, since contamination is present on surface soil and drainage controls have not been installed, surface water runoff from the Site is causing the migration of contaminants to other unsecured off-site areas. This condition could also result in the public coming in direct contact with mercury waste.

The ATSDR Record of Activity concluded the mercury concentrations detected at the Pyridium Mercury Disposal Site No. 1 pose a potential threat to public health. The health effects of the hazardous substance are presented in Attachment A, Appendix C.

### **B. Threats to the Environment**

Laboratory analysis of soil samples collected during the site investigation verified that mercury is present in the wetlands located adjacent to the residential/commercial property. The concentrations identified in the wetlands range from 13.7 to 38.9 mg/kg. The topography of the residential/commercial property allows migration of contaminants into the adjacent wetlands.



A sediment sample collected at the outfall of a drainage culvert located northeast of the Site, across Route 17M, was analyzed and identified mercury at a concentration of 0.643 mg/kg. This data further indicates that waste is migrating off site.

#### **IV. ENDANGERMENT DETERMINATION**

Actual or threatened release of a hazardous substance from the Site, if not addressed by implementing the response action selection in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

#### **V. PROPOSED ACTIONS AND ESTIMATED COSTS**

##### **A. Proposed Actions**

##### **1. Proposed action description**

The scope of work proposed in this action is to excavate and dispose of the contaminated soil on the Site.

A description of the activities proposed for this action are presented below:

- i. Excavate and arrange for the off-site disposal of the contaminated soil;
- ii. Implement a post-excavation soil sampling plan to verify that soil excavation activities were effective in removing mercury contamination to acceptable levels. The clean up goal for this action is 25 mg/kg (ppm) mercury; and
- iii. Backfill excavations with certified clean fill, grade with topsoil and revegetate with an appropriate ground cover;

##### **2. Contribution to remedial performance**

The removal action at the Site is consistent with the requirements of Section 104(a)(2) of CERCLA, which states, "any removal action undertaken...should...to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or the threatened release concerned." Since any remedial action undertaken would encompass the elements in this response, this removal action is consistent with any future remedial work.

##### **3. Description of alternative technologies**

Excavation and off-site land disposal is the most cost-effective and expedient manner to address the waste on-site.

This method of waste treatment will cause the least disturbance to the surrounding community and has the lowest potential for operational/logistical difficulties.

**4. Engineering Evaluation/Cost Analysis (EE/CA)**

Since this is a time-critical removal action, this section is not applicable.

**5. Applicable or relevant and appropriate requirements (ARARs)**

ARARs that are within the scope of this removal action will be met to the extent practicable. Federal requirements applicable for this removal action are RCRA, the Davis Bacon Act, Department of Transportation (DOT) regulations, and Occupational Safety and Health Act (OSHA) regulations.

**6. Project schedule**

The proposed action can begin as soon as funds are allocated. Mobilization/demobilization, security, soil excavation, disposal and site restoration are expected to be completed within four months, barring inclement weather or other unforeseen circumstances.

**B. Estimated Costs**

A summary of the estimated costs for the proposed action is presented below. A detailed cost estimate is included as Attachment C.

	<b><u>Previous Project Costs</u></b>	<b><u>Proposed Project Costs</u></b>	<b><u>Total Project Ceiling (Rounded)</u></b>
<b>EXTRAMURAL COSTS</b>			
ERCS	\$102,000	\$ 926,400	\$1,028,400
START	19,700	61,700	81,400
Contingency (20%)	<u>11,900</u>	<u>197,600</u>	<u>209,500</u>
TOTAL EXTRAMURAL	133,600	1,185,700	1,319,300
INTRAMURAL COSTS	<u>24,200</u>	<u>82,800</u>	<u>107,000</u>
<b>TOTALS</b>	<b>\$157,800</b>	<b>\$1,268,500</b>	<b>\$1,426,300</b>

## **VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

Should no action be taken, or the planned action delayed, the public health risk, especially to nearby residents, will be increased through prolonged exposure to mercury contaminated soil. Furthermore, the off-site mitigation of contaminants, via surface water runoff, will continue and allow for the migration of contaminants into adjoining areas.

## **VII. OUTSTANDING POLICY ISSUE**

None.

## **VIII. ENFORCEMENT**

EPA has not yet completed its investigation into whether one or more Potentially Responsible Parties (PRPs) can be identified for this Site. EPA has met with representatives of the Nepera Chemical Corporation, Inc. (Nepera), the party which as referenced in Section I of the Action Memo, relocated the residents of the trailer park, to inquire whether they would perform this removal action. Nepera, who has not been determined to be a PRP for the Site, declined. EPA is continuing to investigate Nepera as well as other individuals and/or corporations to determine whether any PRPs can be identified to perform all or a portion of this removal action. If a PRP or PRPs should be identified and is/are willing to undertake timely and appropriate corrective action, all or part of the funds requested herein may not be spent. EPA will pursue appropriate planning and implementation of the CERCLA enforcement actions concurrently with the planning and implementation of the time-critical removal action requested herein.

## **IX. RECOMMENDATION**

This decision document represents the selected removal action for the Pyridium Mercury Disposal Site No. 1 in the Village of Harriman, Orange County, New York, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Site conditions continue to meet the NCP Section 300.415(b)(2) criteria for a removal and exemption from the 12-month limit, and I recommend your approval of the proposed restart and ceiling increase of \$1,268,500. The total project ceiling, if approved, will be \$1,426,300, of which an estimated \$1,028,400 will be funded from the Regional removal allowance.

Please indicate your approval and authorization of funding, as per current Delegation of Authority, by signing below.

APPROVAL: *Jill [Signature]* DATE: 3/5/98  
Jeanne M. Fox  
Regional Administrator

DISAPPROVAL: \_\_\_\_\_ DATE: \_\_\_\_\_  
Jeanne M. Fox  
Regional Administrator

cc: (after approval is obtained)  
W. Muszynski, DRA  
R. Caspe, ERRD-D  
W. McCabe, ERRD-DD  
R. Salkie, ERRD-RAB  
J. Rotola, ERRD-RAB  
G. Zachos, OMBUDSMAN  
B. Bellows, EPD  
P. Simons, ORC-NYCSUP  
R. Gherardi, OPM-FIN  
S. Murphy, OPM-FAM  
B. Shaw, 5202G  
C. Moyik, ERRD-PS  
M. O'Toole, NYSDEC  
T. Vickerson, NYSDEC  
A. Raddant, OEPC  
G. Wheaton, NOAA HAZMAT  
O. Douglas, START

**ATTACHMENT A**

200012



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

**ACTION MEMORANDUM**

**DATE:**

**SUBJECT:** Request for a Removal Action Restart, Ceiling Increase, and 12-Month Exemption for the Pyridium Mercury Disposal Site No. 1, Village of Harriman, Orange County, New York

**FROM:** Irmgard P. Huhn, On-Scene Coordinator  
Removal Action Branch

**TO:** Jeanne M. Fox  
Regional Administrator

**THRU:** Richard Caspe, Director  
Emergency and Remedial Response Division

**Site No:** EV

**I. PURPOSE**

The purpose of this Action Memorandum is to request and document approval of the removal action restart, ceiling increase and 12-month exemption proposed herein for the Pyridium Mercury Disposal Site No. 1 (Site), located in the Village of Harriman, Orange County, New York, 10926. The Site is not on the National Priorities List (NPL) and there are no nationally significant precedent-setting issues associated with the proposed removal action.

York, 10926. The Site is not on the National Priorities List (NPL) and there are no nationally significant precedent-setting issues associated with the proposed removal action. 104

The Site consists of a residential/commercial property which was backfilled with mercury contaminated industrial waste. Five mobile home trailers, used for residential purposes, formerly occupied the Site. An Administrative Order on Consent (AOC) was issued to Nepera Inc., and executed by the U.S. Environmental Protection Agency (EPA) on November 28, 1994. Under the AOC, Nepera, Inc. agreed to assist with the relocation of residents in the mobile home trailer park. Following Nepera's completion of the relocation activities, EPA initiated an interim removal action under verbal authorization, to decontaminate and/or dispose of the five mobile home trailers at the Site.

Activities proposed in this Action Memorandum focus on preventing unauthorized access to the Site and controlling run-off of mercury contaminated soils, via surface water, from the property.

The Site meets the criteria for a removal action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as described in Section 300.415 of the National Contingency Plan (NCP). The funding necessary to mitigate the threats associated with the Site is \$86,800, of which \$51,000 is from the Regional removal allocation. These costs, added to the costs for the initial removal action (\$51,000), bring the total project cost to \$157,800, of which \$102,000 is for mitigation contracting.

## II. SITE CONDITIONS AND BACKGROUND

The Comprehensive Environmental Response, Compensation and Liability Information System ID Number for the Site is NY0000856237. The activities proposed in this Action Memorandum will be the third removal action undertaken at the Site. The first removal was initiated in November 1994, by Nepera, Inc. to permanently relocate the residents. The second removal action was initiated by EPA on January 9, 1995 upon verbal authorization from the Division Director.

The Action Memorandum documenting the verbal authorization was signed on February 27, 1996. The action addressed the decontamination and sale or dismantling and disposal of the five trailers on the Site. Additionally, a fence was installed around the Site to reduce the public's risk of direct contact to hazardous substances. The removal action was completed on April 7, 1995.

The ceiling increase and 12-month exemption is necessary to continue site activities to address the threats associated with mercury on the Site. The activities proposed involve the following:

- \* Repair existing fencing or install new fencing on the property perimeter.
- \* Implement on-site drainage controls to minimize the migration of mercury contamination off-site.

## **A. Site Description**

### **1. Removal site evaluation**

On August 8, 1994, the New York State Department of Health (NYSDOH) and the New York State Department of Environmental Conservation (NYSDEC) discovered a white, clay-like substance during an investigation of a complaint from the owner of a transmission shop located adjacent to the Site. The NYSDEC and NYSDOH collected samples of the waste material for laboratory analysis. Analytical results of the samples detected elevated concentrations of mercury (max. 653 mg/kg). Mercury is typically found in soils in this geographic location at levels of less than one mg/kg. This mercury waste is a designated CERCLA hazardous substance and is listed in 40 CFR Table 302.4.

A letter dated September 9, 1994, from the NYSDOH, outlined site conditions and requested that the NYSDEC seek assistance from the EPA to address the site-imposed threats to public health, welfare and the environment. The Site was formally referred to EPA for CERCLA removal action consideration by the NYSDEC on September 29, 1994. The referral letter is included as Appendix A.

From October 13 thru 15, 1994, EPA and the Technical Assistance Team (TAT) performed a preliminary assessment (PA) at the Site. The assessment included verification of mercury contamination and delineation of the horizontal extent of contamination in surface soils. A total of 54 surface soil samples were analyzed using a Spectrace Model 9000 X-Ray Fluorescence Analyzer (XRF). XRF field screening results identified widespread mercury contamination of the trailer park surface soils. The area of surface contamination was determined to encompass approximately 15,000 square feet.

On October 20, 1994, one composite waste sample was collected for waste characterization and mercury speciation. For the purpose of waste characterization, the sample was analyzed for Target Compound List (TCL) parameters, Target Analyte List (TAL) parameters and toxicity via the Toxicity Characteristic Leachate Procedure (TCLP). TAL analysis detected concentrations of mercury above 25 ppm, which is the cleanup level recommended by the Agency for Toxic Substance Disease Registry (ATSDR). TCL compounds detected in the waste sample include: methylene chloride, pyrene, phenanthrene, fluoranthene, benzo(k)fluoranthene, benzo(b)fluoranthene, benzo(a)anthracene, chrysene and benzo(a)pyrene. However, these organic compound concentrations are below NYSDEC-recommended soil cleanup objectives. The TCLP results are below regulatory limits. Mercury speciation results indicate that the sample is a chemical substrate contaminated with a mercuric or mercurous salt, not elemental mercury.

On November 17, 1994, the EPA Environmental Response Team (ERT) and the Response Engineering and Analytical Contractor (REAC) collected dust samples from each of the on-site mobile homes. Analytical results of the sampling event detected mercury concentrations ranging from 0.84 mg/kg to 26.8 mg/kg; the highest concentration of mercury was detected at the entrance area in mobile home No. 3.



On December 6, 1994, ERT, REAC, and TAT collected soil samples from borings to determine the vertical extent of contamination. Soil samples were screened for mercury using an XRF. The subsurface investigation determined that contamination ranges in depth between two feet and six feet below surface grade. It is estimated that 4,000 cubic yards of mercury waste and contaminated soil is on-site.

## **2. Physical location**

The Site is located in a mixed residential/commercial area at the intersection of Route #17M and Harriman Heights Road (Appendix B, Figure 1). The property (Block No. 5: Lot No. 2) is bordered on the northwest by an auto transmission shop, on the northeast by Route #17M, on the southeast by wetlands and on the southwest by a residential lawn. (The wetlands are not formally designated as such on the corresponding U.S. Department of the Interior National Wetland Inventory Map.) Five mobile homes were located in the trailer park. Approximately 16 people resided in the mobile homes which vary in size from 400 to 900 square feet. An elementary school is located approximately 1,000 feet north of the Site.

## **3. Site characteristics**

The property encompasses 1.93 acres. The Site itself, however, occupies approximately one acre of the total property area (Appendix B, Figure 2). On-site contamination is reportedly from the disposal of mercury-contaminated industrial waste generated by the Pyridium Corporation. Disposal of the waste occurred during the 1940's when the material was used to fill in low-lying areas of the property.

Field investigations indicate that approximately 4,000 cubic yards of waste and contaminated soil is present on the Site.

## **4. Release or threatened release into the environment of a hazardous substance, or pollutant, or contaminant**

Mercury is a CERCLA-designated hazardous substance, as defined by Section 101(14). Mercury contaminated waste is visible on surface soils and has been identified in subsurface soils. Site investigations determined that approximately 4,000 cubic yards of waste is present on-site. The waste is unconfined and has migrated off-site into an adjacent wetlands from surface water drainage. Since the waste is present in surface soils, there is also the potential for the waste to be tracked off-site by humans and animals visiting the Site.

## **5. NPL status**

The Site is not listed on the NPL. A PA may be conducted to determine the need for a Site Inspection (SI) for possible NPL listing. The Site has been evaluated by the ATSDR. The health consultation is included in Appendix C.

**6. Maps, pictures and other graphic representations**

Figures 1 and 2 which are included in Appendix B, illustrate the location and configuration of the Site.

**B. Other Actions to Date**

**1. Previous actions**

On October 12, 1994, a public meeting was held in the Village of Harriman to discuss site conditions, present the laboratory results of the August 8, 1994 sampling event and to address community concerns. The meeting was attended by representatives of the Village of Harriman, Orange County Department of Health, NYSDOH, NYSDEC, ATSDR and EPA.

On November 28, 1994, a public availability session was held in the Village of Harriman. The session was attended by representatives of NYSDOH, ATSDR and EPA. Laboratory results of the October 1994 sampling events were made available to the public in addition to discussions on future site specific actions to be performed by NYSDOH, EPA and Nepera Inc.

On November 28, 1994, Nepera, Inc., signed an AOC with EPA agreeing to fund the relocation of the residents of the trailer park. Nepera distributed relocation settlements to the eligible residents according to federal relocation guidelines.

In December 1994, a Draft Health Consultation Report was prepared by the NYSDOH under a cooperative agreement with the ATSDR (Appendix C). The report states that the Pyridium Site is a public health hazard due to elevated mercury concentrations in soils. On-site residents are suspected to be at risk of kidney damage through mercury ingestion/inhalation.

On January 9, 1995, under verbal authorization, EPA mobilized Emergency Response Cleanup Service contractor (ERCS) and TAT to begin site removal activities. As residents were relocated (in accordance with the AOC with Nepera Inc.), their mobile homes were decontaminated and sold or demolished and disposed of. Prior to the sale of two of the mobile homes, the interiors were decontaminated via removal of all porous materials (carpets, curtains and furniture), cleaning of all hard surface areas and dusting of all duct work. Following decontamination, samples were collected to verify attainment of acceptable interior cleanup levels. The three mobile homes not sold were dismantled on-site and discarded as debris. All utilities (water, sewer and electric) were disconnected and all heating oil and propane storage tanks were removed for disposal/recycle. To minimize unauthorized access to the Site, a five foot fence was installed with warning signs; along the property front and snow fence was placed around the remainder of the Site perimeter. The removal activities were completed on April 7, 1995.

**2. Current actions**

Site activities proposed under this removal action are discussed in Section V.

### **C. State and Local Authorities' Role**

#### **1. State and local actions to date**

In August 1994, the NYSDEC and the NYSDOH conducted preliminary investigations at the Site. These investigations involved the collection of soil samples from visibly contaminated areas, sampling indoor and outdoor air, utilizing a mercury vapor analyzer and meeting with the affected residents to discuss public health concerns. During the month of October 1994, the NYSDOH conducted urine mercury screening of the residents residing in the mobile homes. A total of 14 individuals participated in the testing program. All 14 individuals had urine mercury levels within the normal range, below 20 micrograms per liter. The state agencies will continue to offer health education services to the affected residents while observing EPA's removal activities.

#### **2. Potential for continued State/local response**

State and local government agencies are not able to undertake timely and costly response actions to eliminate the threats posed by the Site. Both branches of government will provide support services to EPA as the threats on-site are addressed.

### **III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES**

The Site meets the criteria for a removal action under CERCLA, as described in Section 300.415(b)(2) of the NCP. The Site poses a health threat to local residents and animals that could come in direct contact with the hazardous substance at the Site. High concentrations of mercury are on the ground surface and have migrated off-site by surface water drainage to contaminate larger areas.

#### **A. Threats to Public Health or Welfare**

The presence of mercury at elevated concentrations has been documented in surface and subsurface soils. Laboratory results of eleven surface soil samples analyzed by Cold Vapor Atomic Absorption identified mercury at concentrations ranging from 3.74 mg/kg to 657 mg/kg.

Security fence around the Site is inadequate, resulting in unauthorized access to the property and direct contact to mercury waste. Off-site migration of contamination is occurring due to surface water draining from the property. This situation is causing off-site areas, which are unsecured, to become contaminated resulting in other areas where the public can come in direct contact with mercury.

The ATSDR Record of Activity concluded the mercury concentrations detected at the Pyridium Mercury Disposal Site No. 1 poses a public health hazard. The health effects of the hazardous substance is presented in Appendix C.

## **B. Threats to the Environment**

Laboratory analysis of soil samples collected during the SI verified that mercury is present in the off-site wetlands located adjacent to the Site. The concentrations identified in the wetlands range from 13.7 mg/kg to 38.9 mg/kg. Although mercury waste was not observed in surface soil of the wetland, it is believed that waste from the Site is being carried off-site by surface water drainage. Surface soil on-site is graded so that surface water is channeled toward the wetland area.

A sediment sample collected at the outfall of a drainage culvert located northeast of the Site, across Route #17M, was analyzed and identified mercury at a concentration of (0.643 mg/kg). This data further indicates that waste is migrating off-site.

## **IV. ENDANGERMENT DETERMINATION**

Actual or threatened release of a hazardous substance from the Site, if not addressed by implementing the response action selection in this Action Memorandum, may present an imminent and substantial endangerment to public health, welfare, or the environment.

## **V. EXEMPTION FROM STATUTORY LIMIT**

### **A. Emergency Exemption**

#### **1. There is an immediate risk to public health or welfare or the environment**

Surface soil is contaminated with mercury at concentrations that range between 3.7 mg/kg and 657 mg/kg. The Site is unsecured since security fence is missing or is in disrepair. Trespassers to the Site will come in contact with mercury waste.

ATSDR's August 28, 1995 Health Consultation states that the Site poses a public health hazard because inorganic mercury occurs in soil at concentrations which may cause adverse health effects.

Investigations conducted by ATSDR and the NYSDOH indicated that human exposure to inorganic mercury had occurred by dermal contact.

In it's present state, unauthorized access to the Site and to areas of high concentrations of mercury is possible. It has been confirmed that neighborhood children frequent the Site. Repeated handling of contaminated soil increases the likelihood of ingestion. In addition, mercury contaminated soil can be tracked into homes.

Long-term exposure to mercury can damage the kidneys, nervous system and developing fetus.

2. **Continued response actions are immediately required to prevent, limit, or mitigate an emergency.**

ATSDR and the NYSDOH have evaluated site conditions and associated analytical data and have determined that conditions on-site represent a potential public health hazard. Mercury waste on-site is present in surface soils which are being impacted on a daily basis by environmental conditions. Wind and rain are causing mercury waste to migrate off-site into wetlands and other areas not previously impacted. Continued response actions are necessary to modify site drainage pathways to minimize the off-site migration of waste via surface water runoff.

3. **Assistance will not otherwise be provided on a timely basis**

Neither State or county government have the resources to mitigate the threats associated with the Site in a timely manner.

## **VI. PROPOSED ACTIONS AND ESTIMATED COSTS**

### **A. Proposed Actions**

#### **1. Proposed action description**

The purpose of the current action is to prevent off-site migration of the contaminants and restrict access to the Site.

A description of the activities proposed for this action are presented below:

- i. **Modify site grades to control off-site surface water drainage.**
- ii. **Install and/or repair chain link fence around the property to restrict access to the Site.**
- iii. **Cap areas of exposed waste.**

#### **2. Contribution to remedial performance**

The removal action at the Site is consistent with the requirements of Section 104(a)(2) of CERCLA, which states, "any removal action undertaken...should...to the extent practicable, contribute to the efficient performance of any long-term remedial action with respect to the release or the threatened release concerned." Since any remedial action undertaken would encompass the elements in this response, this removal action is consistent with any future remedial work.

#### **3. Description of alternative technologies**

Not applicable.

#### 4. Engineering Evaluation/Cost Analysis (EE/CA)

Since this is a time-critical removal action, this section is not applicable.

#### 5. Applicable or relevant and appropriate requirements (ARARs)

ARARs that are within the scope of this removal action will be met to the extent practicable. Federal ARARs determined to be applicable for this removal action is the Occupational Safety and Health Act.

#### 6. Project schedule

The proposed action can begin as soon as funds are allocated. Mobilization/demobilization, migration controls and access restraints are expected to be completed within one month, barring unforeseen circumstances.

#### B. Estimated Costs

A summary of the estimated costs for the proposed action is presented below. A detailed cost estimate is included as Appendix D:

	<u>Previous Project Costs</u>	<u>Proposed Project Costs</u>	<u>Total Project Ceiling (Rounded)</u>
<b>EXTRAMURAL COSTS</b>			
ERCS	\$ 51,000	\$ 51,000	\$ 102,000
TAT	11,000	8,700	19,700
Contingency (20%)	<u>n/a</u>	<u>11,900</u>	<u>11,900</u>
<b>TOTAL EXTRAMURAL</b>	<b>\$ 62,000</b>	<b>\$ 71,600</b>	<b>\$ 133,600</b>
<b>INTRAMURAL COSTS</b>			
	<u>\$ 9,000</u>	<u>\$ 15,200</u>	<u>\$ 24,200</u>
<b>TOTALS</b>	<b>\$ 71,000</b>	<b>\$ 86,800</b>	<b>\$ 157,800</b>

**VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN**

Should no action be taken, or the planned action delayed, the public health risk, especially to nearby residents, will be increased through prolonged exposure to mercury contaminated soil. Additionally, water run-off will spread the waste further into adjoining areas.

**VIII. OUTSTANDING POLICY ISSUE**

None.

**IX. ENFORCEMENT**

During the month of October 1994, EPA and TAT conducted a title and deed search for the property. Property owner information was obtained from 1894 to the present and is being kept on file.

The on-site waste was reportedly generated during the 1940's by the Pyridium Corporation. Nepera, Inc., currently owns and operates the facility previously operated by Pyridium Corporation. On November 28, 1994, Nepera, Inc. signed an AOC with EPA. Pursuant to the AOC, Nepera Inc., agreed to buy out and assist with the relocation of the trailer park residents. Nepera has disclaimed liability for the Site; EPA is currently investigating its potential liability.

**X. RECOMMENDATION**

This decision document represents the selected removal action for the Pyridium Mercury Disposal Site No. #1 in the Village of Harriman, Orange County, New York, developed in accordance with CERCLA, as amended, and is not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Site conditions continue to meet the NCP Section 300.415(b)(2) criteria for a removal, and I recommend your approval of the proposed ceiling increase of \$86,800 and 12-month exemption. The total project ceiling if approved will be \$157,800, of which an estimated \$102,000 will be funded from the Regional removal allowance.

Please indicate your approval and authorization of funding, as per current Delegation of Authority, by signing below.

APPROVAL: *[Signature]* DATE: 9/25/57  
Jeanne M. Fox  
Regional Administrator

DISAPPROVAL: \_\_\_\_\_ DATE: \_\_\_\_\_  
Jeanne M. Fox  
Regional Administrator

cc: (after approval is obtained)  
W. Muszynski, DRA  
R. Caspe, ERRD-D  
W. McCabe, ERRD-DD  
R. Salkie, ERRD-RAB  
J. Rotola, ERRD-RAB  
G. Zachos, OMBUDSAN  
B. Bellow, EPD  
P. Simon, ORC-NYCSUP  
R. Gherardi, OPM-FIN  
S. Murphy, OPM-FAM  
B. Shaw, 5202G  
C. Moyik, ERRD-PS  
M. O'Toole, NYSDEC  
T. Vickerson, NYSDEC  
A. Raddant, OEPC  
G. Wheaton, NOAA HAZMAT  
O. Douglas, START



## **APPENDIX A**

200024

To: Richard Saiter	From: AL Rockmore
Subject: EPA	Ca: NY DEC
Phone: (909) 321-6658	Phone: (518) 457-9210
Fax: (909) 906-6122	Fax: (518) 457-7743

New York State Department of  
50 Wolf Road, Albany, New York, 12242-1201

Langdon Marsh  
Commissioner

SEP 29 1994

Ms. Kathleen C. Callahan  
Director  
Emergency & Remedial Response Division  
United States Environmental  
Protection Agency  
Region II  
26 Federal Plaza  
New York, New York 10278

Dear Ms. Callahan:

Re: Pyridium Mercury Disposal Site  
Harriman (V) Orange County, N.Y.

I have enclosed a copy of a letter from the New York State Department of Health, dated September 9, 1994, regarding confirmed mercury contamination in the soil beneath five trailer homes at the referenced location in the Village of Harriman, Orange County, New York.

The trailer park is located near Nepesa, Inc., Harriman, which is listed in the Registry of Inactive Hazardous Waste Disposal Sites in New York State as Site Code #3-36-006. We are presently trying to determine if the mercury contamination is related to the Nepesa Site.

However, in the meantime, we hereby request that the USEPA conduct an Emergency Removal Assessment at the referenced location and initiate whatever response action is warranted by the findings of such an assessment and are authorized by CERCLA/SARA.

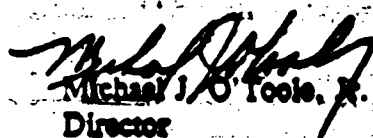
200025

Ms. Kathleen C. Callahan

Page 2

If you have any questions regarding this request, please contact Alan Rockmore,  
P.E., of my staff, at (518) 457-9180.

Sincerely,



Michael J. O'Toole, Jr.

Director

Div. of Hazardous Waste Remediation

Enclosure

cc: A. Carlson, NYSDOH  
R. Salkie, USEPA, Edison, New Jersey  
G. Zachor, USEPA, Edison, New Jersey  
J. Witkowski, USEPA, Edison, New Jersey

200026



# STATE OF NEW YORK DEPARTMENT OF HEALTH

Center for Environmental Health

2 University Place

Albany, New York 12203-3300

Mark B. Goss, M.D., M.P.H.  
Commissioner

Rita Wilson

Executive Deputy Commissioner

OFFICE OF PUBLIC HEALTH

Louis F. Novak, M.D., M.P.H.  
Director

Diane Jones Reed

Executive Deputy Director

William H. Stead, P.E., Ph.D.  
Center Director

September 9, 1991

Mr. Michael J. O'Toole, P.E., Director  
Division of Hazardous Waste Remediation  
NYS Department of Environmental Conservation  
60 Wolf Road, Room 212  
Albany, New York 12273

RE: Mitigating Potential Exposures  
Pyridium Mercury Disposal Site  
NYSOCH Site #136821N  
(V) Harriman, Orange County

Dear Mr. O'Toole:

As you know, both our agencies recently learned that five residential trailer homes sit over chemical wastes near the corner of Routes 17M and 71 in the Village of Harriman, Orange County. Within the five trailers live twelve residents including an expectant mother and her four year old son. The waste materials, suspected to be calcium sulfate and mercuric sulfide generated by the former Pyridium Corporation (presently Nevora, Inc.), were allegedly dumped during the late 1940's. Testing by the State has revealed significantly elevated levels of mercury in the surface soils and surface wastes ranging from 110 parts per million (ppm) to 653 ppm with an average mercury concentration of 258 ppm. Mercury is typically found in soils at levels less than 1 ppm. Residents have reportedly encountered the waste materials in recurring sinkholes/subsidence on the property, within soil excavations for fence posts and sewer lines, while gardening, and during wet conditions when their parking area turns milky-white. Allegedly children, now grown, had used the claylike material as if it was "Playdoh."

Exposure to either inorganic or organic mercury can permanently damage the brain, kidneys, and developing fetus. The most sensitive target of low-level exposure to inorganic mercury appears to be the kidneys. Exposure to mercury in the soil can occur through a number of routes. There is the potential for direct oral exposure via ingestion of soil, dust, and garden produce grown in contaminated soil. Mercury can be absorbed into the body via dermal contact through activities associated with soil disturbances such as gardening, yard work, and play. There also exists the potential for inhalation of mercury particulates and mercury vapor.

The elevated levels of mercury in soil are a public health concern. To minimize potential human exposure to these accessible chemical wastes, residents have been advised to avoid physical contact with their yard soils which contain the easily distinguishable white waste material. Vegetable gardening is not recommended. These temporary advisories should be followed by a timely permanent solution. However, Extraction Procedure Toxicity testing by the New York State Department

200027

of Environmental Conservation's contract laboratory did not confirm the presence of "hazardous waste" as legally defined by the State. Therefore, as I understand the process, State Superfund monies cannot be spent on any site-related activities that may be needed.

Consequently, the State should seek assistance from the United States Environmental Protection Agency (EPA) to expedite this matter for the long-term welfare of the concerned residents as well as for the protection of the environment. To that end, this Department is in the process of preparing a health consultation, which will be reviewed by the federal Agency for Toxic Substances and Disease Registry (ATSDR). We expect conditions at the site to meet the ATSDR's definition of a public health hazard. We will be forwarding a health consultation as soon as possible. In the meantime, the ATSDR and the EPA have been advised of the situation.

Should you wish to discuss this issue further, do not hesitate to contact me or Mr. Steven Bates at (518) 458-6310.

Sincerely,



G. Anders Carlson, Ph.D.  
Director  
Bureau of Environmental Exposure  
Investigation

sg/94252PROC0019

cc: Dr. N. Kim  
Mr. R. Tramontano/Mr. R. Svenson/Mr. P. Mrozek  
Dr. E. Horn/Dr. D. Lutinger/Ms. P. Fritz  
Ms. N. Knapp  
Mr. S. Bates/Mr. M. VanVelkenburg  
Mr. M. Knudsen, MDO  
Mr. M. Schlicker - OCH  
Mr. C. Goddard - DEC  
Ms. S. McCormick/Mr. C. Magee DEC  
Mr. D. Eaton - DEC  
Mr. A. Klaus - DEC, Region 3  
Mr. A. Block/Mr. S. Jones - ATSDR  
Mr. W. McCabe - EPA, Region 2

**ATTACHMENT B**

**200029**

July 13, 95  
03:31 PM

\*\*\* ATSDR Regional Information System 2.4 \*\*\*  
- RECORD OF ACTIVITY -

PAGE 1

- Author Information -

Author: Steven Jones  
User ID: SXJ6

Action Date: 05/22/95  
Time: 08:00 AM

- Site Specific Information -

Name: PYRIDIUM MERCURY DISPOSAL  
Address: ROUTE 17M City: HARRIMAN  
County: ORANGE State: NY Zip Code:  
CERCLIS #: CRS #: 20EV Region: 02 Congr. District: 00

- Site Status -

(1): NPL ☒ Non-NPL RCRA Non-Site Specific SACM Federal\*  
(2): Emergency Response Remedial ☒ Removal Other:

- Activities -

Incoming Call	Public Meeting*	1 Health Consult*	Site Visit*
Outgoing Call	1 Other Meeting	Health Referral	Info Provided
Confrence Call	1 Data Review	Written Respons	Training
Incoming Mail	Trip Report	Worker Health	Tech Assist
Immed Removal	Other Activity:		

- Requestor and Affiliation -

Requestor: ERIC WILSON  
Affiliation: EPA, OSC-REGION 2  
Work Phone: (908)906-6991 Other Phone: ( ) -  
Address:

County: Congressional District: 00

- Contacts and Affiliations -

KEN ORLOFF	ATSDR, DHAC/EICB
MARK MADDALONI	EPA, RISK ASSESSOR
PAT FRITZ	STATE HEALTH, NYSDOH

Program Area: Public Health Consultation

Enclosures: N

CC: A. Block  
D. Harper  
K. Orloff

M. Maddaloni, USEPA  
P. Fritz, NYSDOH  
E. Wilson, USEPA

200030

PYRIDIUM MERCURY DISPOSAL

Action Date: 05/22/95

- Narrative Summary -

The USEPA Removal Program has requested that ATSDR evaluate the health implications of using a cleanup level of 25 mg/kg of mercury in residential soil at the Pyridium Mercury Disposal (#1) site, in Harriman, New York. The site formerly consisted of five trailer homes that were placed on an area where mercury waste had been buried. The highest concentration of mercury found in residential soil was 653 mg/kg. Speciation was performed and the mercury was found to be in an insoluble inorganic salt. The trailer homes have been relocated, and the USEPA is preparing to perform a removal of contaminated soil at the site.

- Action Required/Recommendations/Info Provided -

Based on a residential scenario, the 25 mg/kg contaminant level that will be left in place at the site would not represent a health concern to any future residents that may inhabit the area. ATSDR is available to review any new sampling data that may be generated at this site during the course of the removal, or afterward.

Signature:

SEH

Date:

7/20/95

Concurrence:

Kenneth G. O'Neil, Ph.D.

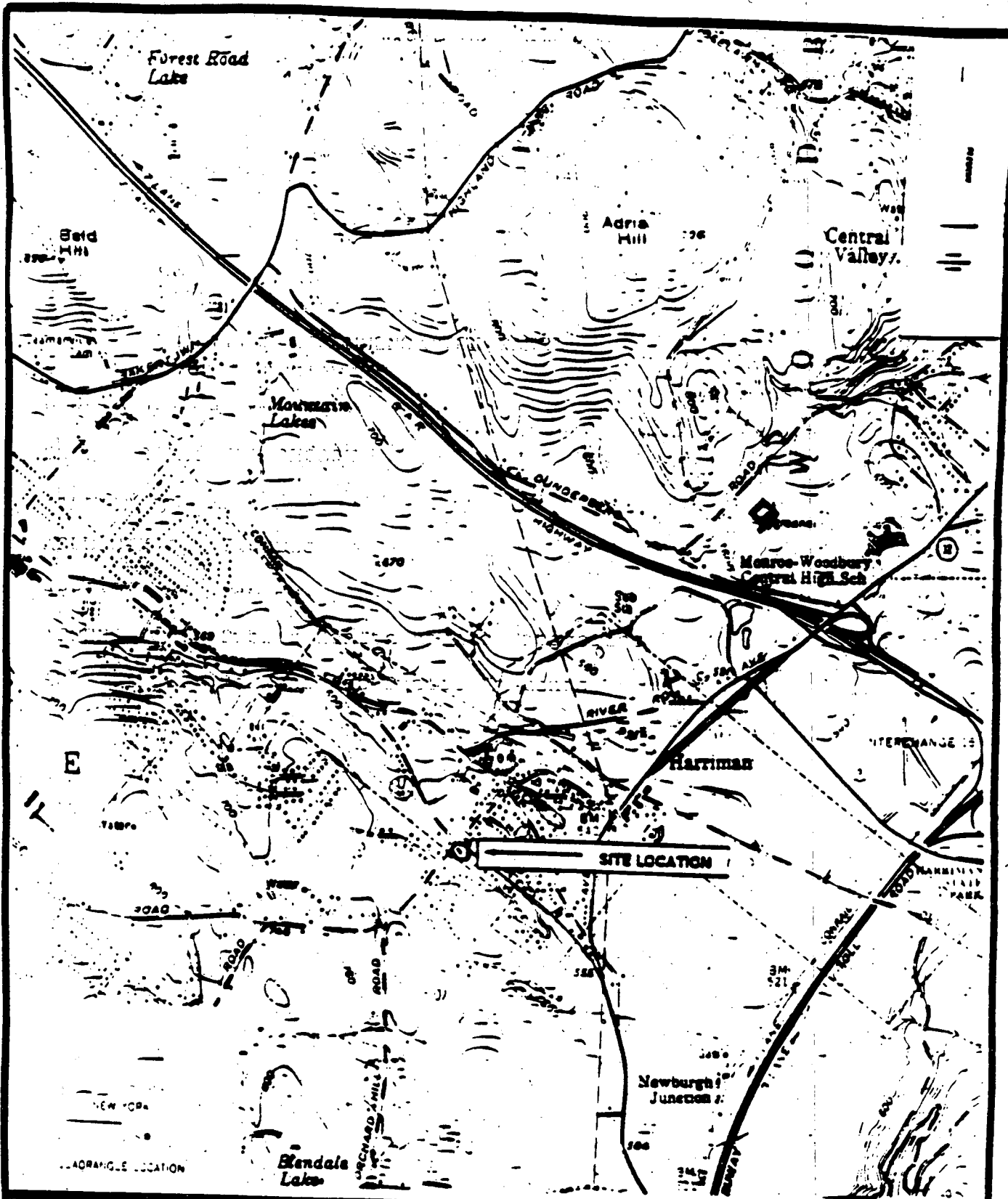
Date:

7/14/95



**ATTACHMENT C**

200032



**WESTON**

Roy F. Weston, Inc.  
MAJOR PROGRAMS DIVISION

IN ASSOCIATION WITH FOSTER WHEELER CORP.,  
C.C. JOHNSON & MALHOTRA, P.C., RESOURCE  
APPLICATIONS, INC. AND R.E. SARRERA ASSOCIATES

EPA PM

D. HARKAY

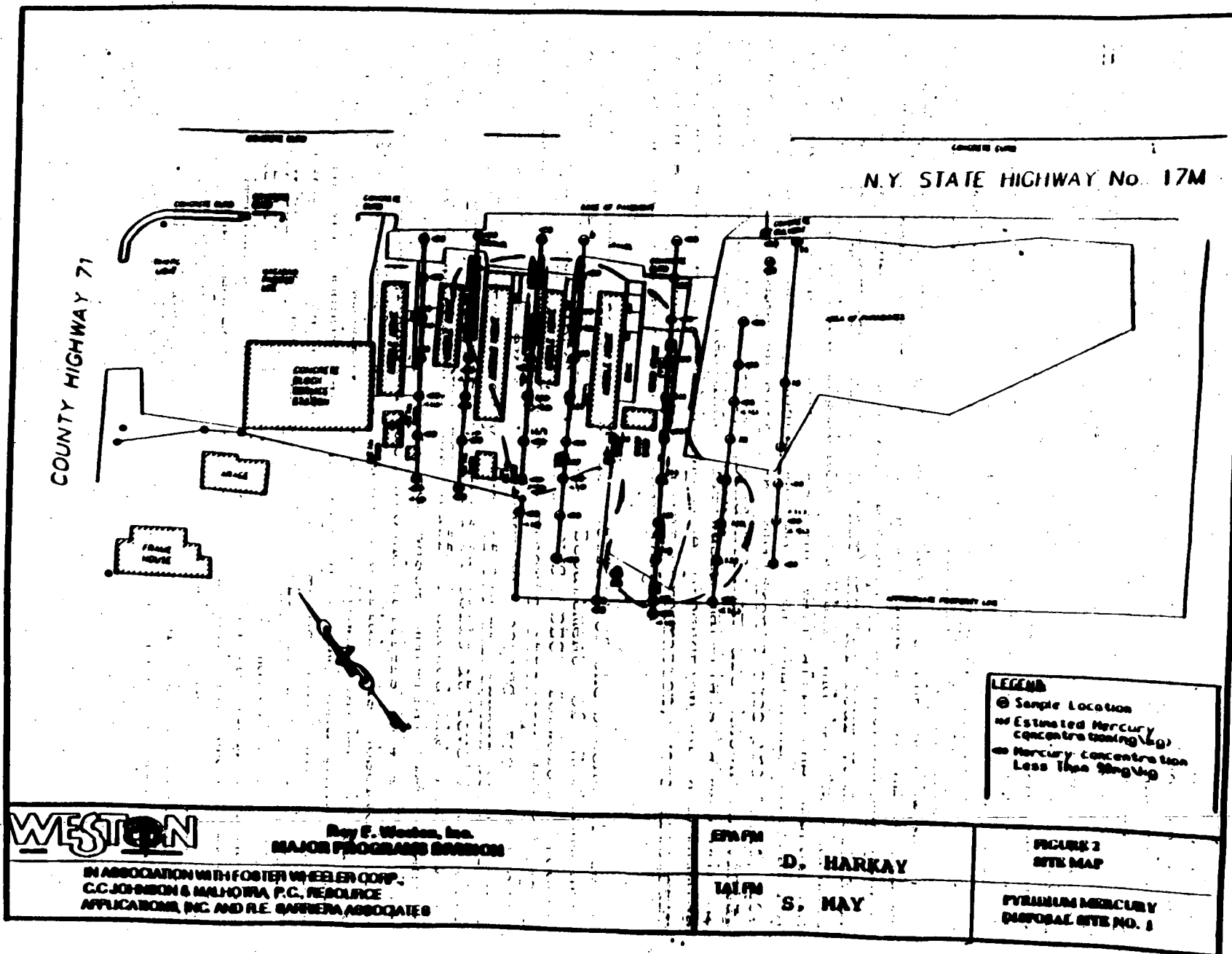
TAT PM

S. MAY

FIGURE 1  
SITE LOCATION MAP

PYRIDUM MERCURY  
DISPOSAL SITE NO. 1

200033



**WESTON**

Ray F. Weston, Inc.  
MAJOR PROGRAMS DIVISION

IN ASSOCIATION WITH FOSTER WHEELER CORP.,  
C.C. JOHNSON & MALHOTRA P.C., RESOURCE  
APPLICATIONS, INC. AND R.E. GARRERA ASSOCIATES

EPH/PM

D. HARKAY

IA/PM

S. MAY

FIGURE 2  
SITE MAP

PYRAMID MERCURY  
DISPOSAL SITE NO. 1

200034

## **APPENDIX C**



# Memorandum

Date **August 29, 1995**

From **Arthur Block**  
**Sr. Regional Representative**

Subject **Final Health Consultation for Pyridium Mercury Disposal Sites  
#1/CERCLIS NO. NYD0000856237 and #2/CERCLIS NO. NYD000162850,  
Harriman, Orange County, NY**

To

**SEE DISTRIBUTION BELOW**

Attached are copies of the August 28, 1995, Health Consultation for the above sites prepared by the New York State Department of Health (NYSDOH) under cooperative agreement with the Agency for Toxic Substance and Disease Registry (ATSDR).

Comments on the draft documents previously sent to your office have been reviewed and incorporated, where applicable and indicated on the certification page contained within the health consultation. ATSDR has reviewed the consultation and concurs with its findings.

If you have any questions or comments regarding the content of this document, please contact my office at extensions 7-4305 or 7-4306.

**Attachments**

**Distribution:**

Kathleen Callahan, Director, EPA/ERRD  
Richard Salkie, Associate Director, EPA/ERRD/REPP  
Dennis Santella, EPA/ERRD/PSB  
George Zachos, EPA/ERRD/RAB  
Joseph Rotele, ERRD/RAB  
Dan Harper, ATSDR/ORO  
Bob Williams, ATSDR/DHAC  
Greg Ulirsch, ATSDR/RPB  
ATSDR/DHAC/PERIS  
Lani Rafferty, NYSDOH

200036

**HEALTH CONSULTATION**

**PYRIDIUM MERCURY DISPOSAL SITE #1  
HARRIMAN, ORANGE COUNTY, NEW YORK  
CERCLIS NO. NY0000856237**

**August 28, 1995**

**Prepared by:**

**New York State Department of Health  
Under a Cooperative Agreement with the  
Agency for Toxic Substances and Disease Registry**

**200037**

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## BACKGROUND AND STATEMENT OF ISSUES

The New York State Department of Health (NYS DOH) through a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR) has reviewed information and analytical data from the Pyridium Mercury Disposal Site #1 to determine if there is a public health threat associated with exposure to mercury. The Pyridium Mercury Disposal Site #1 (Figure 1, Appendix A) is in the Village of Harriman, Town of Monroe, Orange County, near the corner of Routes 17M (Ramapo Avenue) and 71 (Harriman Heights Road). The area of concern (Figures 2A and 2B, Appendix A), which is about one acre in size, includes five, single-family trailer homes. The site, on record as the McGill Trailer Park, is under permit from the Orange County Health Department as a regulated mobile home park. The property is bounded to the northwest by an auto transmission shop, to the southwest by a residential lawn, to the southeast by wetlands and to the northeast by Route 17M. The five trailers are occupied by sixteen residents, including an expectant (12/94) mother and her four year old son. Three of those sixteen residents, a mother and her two teenage sons, moved in with a current resident well after the wastes had been identified and residents warned. Of the nine parents and seven children living on-site, the children's ages are 4, 14, 16, 17, 20, 28 and 31. Young grandchildren are known to visit. According to a local resident, the waste materials, a mercuric or mercurous salt generated during the production of niacinamide (vitamin B-3) by the former Pyridium Corporation, were allegedly dumped during the late 1940's (1947-1948).

On August 8, 1994, the NYS DOH was notified of the potential health concern by the New York State Department of Environmental Conservation (NYS DEC). The NYS DEC forwarded recent correspondence from the property owner's attorney describing a white clay-like material (discovered behind the trailers) containing an elevated mercury level of 238 milligrams per kilogram (mg/kg). Mercury is typically found in soils at levels less than 1 mg/kg. In response, NYS DOH staff inspected the property on August 9, 1994. The suspected waste material was readily identified at the ground surface around trailers 3, 4 and 5. The easily distinguishable white waste material was observed in a sinkhole, between walkway steps, in a flower garden, beneath a trailer, in ant mounds, and underlying a few vegetable plants. Four surface (0-1 inch) soil/waste samples were collected and analyzed by the NYS DEC laboratory for total mercury. Mercury was detected at 110 mg/kg in a flower garden, 170 mg/kg in a sinkhole, 230 mg/kg behind a storage shed and 320 mg/kg between sidewalk steps. At the request of the NYS DOH and the ATSDR, the US Environmental Protection Agency (US EPA) later contracted for further laboratory analysis (i.e., speciation) of the wastes. The material was identified as inorganic mercury: a mercuric or mercurous salt.



Some of the residents interviewed by NYS DOH staff during the August 9 visit reportedly had contact with the waste material when gardening and digging fence post holes. One parent, who has lived on-site for about 25 years, said that while her children were growing up, they played with the clay-like waste as if it were modelling clay.

On August 11, 1994, NYS DEC staff collected additional environmental samples to determine if the waste materials could be classified as "hazardous waste" according to NYS DEC's legal definition. By NYS DEC's definition at that time, a mercury waste sample would be regarded as a "hazardous waste" if the Extraction Procedure Toxicity (EPTox) analysis of the sample detected a concentration of the metal at or above 200 micrograms per liter (mcg/L). The EPTox test is used to determine the likelihood that mercury will leach from the waste and contaminate groundwater. The EPTox test alone does not determine if a chemical concentration in soil or waste is a public health concern. Six soil/waste samples and one surface water sample were taken. EPTox results for mercury in the six soil/waste samples ranged from 0.1 mcg/L to 20.0 mcg/L, well below the NYS DEC action level. Total mercury analyses were also performed. Concentrations detected near the trailers were: 198 mg/kg in a sinkhole at 18 inches below grade; 230 mg/kg in the same sinkhole at 6 inches below grade; 396 mg/kg beneath trailer #3; and 653 mg/kg immediately next to trailer #3 beneath (1-4 inches) a three plant vegetable garden. Mercury was detected in the stone/soil driveway at 4.6 mg/kg and at 0.92 mg/kg in the bank of a stream running through the adjacent wetlands. Mercury was detected in a water sample from a culvert draining the wetlands at a level of 0.13 mcg/L.

On August 17 and 18, 1994, NYS DOH staff monitored indoor and outdoor air using a portable, instantaneous-reading mercury vapor analyzer (Jerome Model 411). Due to instrumentation problems, the data collected at that time are questionable and, therefore, could not be used to adequately evaluate air quality.

Residents rely on the Village of Harriman municipal water supply for drinking water. These wells are not close to this site. The village water is regularly monitored to ensure that it meets State drinking water standards for public supplies. The service connections from the watermain to the trailers likely pass through buried waste materials. Entry of contaminants into the buried water pipes is unlikely. Should there be a crack, break, breach, or compromise in the integrity of the waterline piping, positive pressure within the pipes would force water out rather than allow contaminants to seep in. A major break in a waterline would be readily noticed by residents through a loss of water at the tap and by discolored (i.e., dirty) water.

## DISCUSSION

Mercury is present at higher than normal levels in surface soil and surface wastes at the Pyridium Mercury Disposal site. Exposure to mercury in surface soil and surface waste may occur by accidental eating of soil and dust, eating of garden fruits and vegetables grown in contaminated soils, skin contact or breathing of mercury contaminated dust or vapor. Children generally eat greater amounts of soil and dust than adults. This is especially true for preschoolers because they tend to put their hands or fingers in their mouths or for children with pica (an unreasonable craving), in this case, for soil. Those children who repeatedly handle the waste material would have a high likelihood of ingesting the mercury waste which could stick to their hands. Mercury contaminated soil can also be tracked into the home on shoes and left on floors and surfaces where people could come in contact with it. Indirect exposure for an infant can occur from eating contaminated breast milk if the mother were exposed to mercury.

Long-term exposure to mercury can damage the kidneys, nervous system and developing fetus (baby). The most sensitive target organ for low-level inorganic mercury exposure appears to be the kidneys.

Health comparison values are used to assess if further evaluation of the soil is needed. Several factors are considered in the evaluation including soil ingestion rate, the size and age of the exposed individual, length of exposure and the health effects data. A health comparison value for mercury in soil is the mercury concentration in soil which would provide, by ingestion, a dose of mercury equal to the daily exposure below which adverse health effects are unlikely to occur. A contaminant at concentrations exceeding a health comparison value does not mean that either exposure to the contaminant or adverse health effects have occurred or will occur since a margin of safety is built into the value.

Health comparison values are developed assuming worst case exposure, i.e., the greatest possible exposure. Using soil ingestion rates for children with pica will overestimate soil ingestion rates for the general public.

Soil mercury concentrations identified at the site range from 110 to 653 parts per million (ppm). Table 1 (Appendix B) contains soil health comparison values for inorganic mercury. The soil mercury concentrations at the site exceed some of the health comparison values. Therefore, the soil concentrations of mercury at the Pyridium Mercury Waste Disposal Site #1 warrant further characterization and evaluation of exposure pathways and the potential for adverse health effects in individuals who may have been exposed to the waste materials.

A child with pica has the highest exposure and, based on the highest soil mercury concentration (653 ppm), is at high risk of having adverse kidney effects. Children without pica and adults are at minimal risk of having adverse kidney effects. Fruits and vegetables grown in contaminated soil are an additional source of exposure. Mercury levels are higher in plants grown in contaminated soil than in those grown in soil which is not contaminated. Eating such plants could contribute additional mercury to the diet.

On October 26, 1994, as recommended by the ATSDR's Health Activities Recommendation Panel, the NYS DOH conducted urine mercury screening of the residents living in the five mobile homes. A total of 14 individuals participated in the testing which involved the collection of first catch (first thing in the morning) urine samples. Analyses were performed by the NYS DOH Wadsworth Center for Laboratories and Research. All 14 of these people had urine mercury levels within the normal range, below 20 mcg/L. Two residents were not included in the testing because they moved away on their own and could not be located.

The residents' urine mercury screening results indicate exposure has not caused an increase in mercury levels in the body to levels of concern for adverse health effects. The soil mercury concentrations at the site provide a source for exposure which could produce health effects in individuals whose activities lead to greater contact with the waste material.

On May 5, 1995, the NYS DOH sent copies of this health consultation to known interested parties requesting concerns and comments on the report by June 16, 1995. The NYS DOH received two comments which are responded to in Appendix D.

#### CONCLUSIONS

Based on the information reviewed, the NYS DOH in consultation with ATSDR concludes the following:

1. Based on ATSDR's present public health hazard category classification (Appendix C), the Pyridium Mercury Disposal Site #1 is a public health hazard because inorganic mercury occurs in soil at concentrations which may cause health effects. Residents, particularly preschool children who may eat or play with contaminated soil and residents eating plants grown in the contaminated soil, are at risk of kidney damage due to the mercury contamination at the Pyridium Mercury Disposal Site #1.
2. Based on interviews with residents, exposure to inorganic mercury has occurred by dermal contact.

3. The nature and extent of contamination at this site has not been completely characterized. Contamination other than inorganic mercury may be present within subsurface fill materials. Sampling should extend outward and downward and include groundwater.
4. Based on the results of the recent urine mercury screening, follow-up testing does not appear necessary at this time. The NYS DOH does not plan, at this time, to track previous site residents to conduct urine/mercury analysis since the urine/mercury levels of the current site residents (those most likely at risk of exposure) were within the normal range. In addition; it is unlikely that mercury would be detected above the normal range in persons exposed several months before the urinary mercury testing because mercury leaves the body over time.

#### **RECOMMENDATIONS**

1. Measures should be taken to prevent exposures to yard soils which contain the mercury wastes. Dissociate (i.e., remove) all the residents, especially the expectant mother and her young child, from the wastes to prevent exposures that could damage their kidneys or neurological systems.
2. To evaluate exposure to mercury in the homes, dust samples should be collected within the trailers.
3. Completely characterize the nature and extent of contamination at the site. A comprehensive analysis of the wastes should be performed. Sampling of soils, wastes, and groundwater should extend outward and downward to determine areas requiring future remedial actions. Subsurface investigations might potentially identify other types of chemical wastes used as fill, or find buried drums, or detect groundwater contamination.
4. The company or agency that performs the additional environmental sampling should work with the NYS DOH so that sampling design and detection levels are appropriate to base further public health decisions upon.
5. Impose deed restrictions on the property, in the absence of waste removal, to prevent possible disturbance and contact with buried wastes.

#### **HEALTH ACTIVITIES RECOMMENDATION PANEL RECOMMENDATIONS**

The data and information developed in the Health Consultation for the Pyridium Mercury Disposal Site #1, Harriman, New York, has been

reviewed by ATSDR's Health Activities Recommendation Panel (HARP) to determine appropriate follow-up health actions. Because of past and current exposure to mercury-contaminated residential soils, the panel recommended this site for follow-up health activities. Specifically, those persons exposed should have urine samples collected and analyzed for the presence of mercury. In addition, the HARP also determined that community health and health professions education are indicated. The NYS DOH is currently conducting site-specific education activities at the site. Other health activities may be needed as more information about actual exposures and the nature of the waste materials are determined.

## **PUBLIC HEALTH ACTIONS**

### **Public Health Actions Taken**

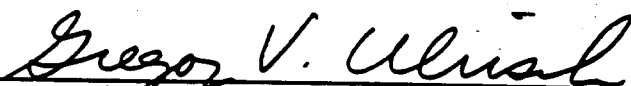
1. The NYS DOH has held two public meetings and a public availability session since August 1994 to provide information to the community about the site and to address health-related concerns.
2. The NYS DOH collected urine samples from the 14 residents currently living on-site. The samples were analyzed for mercury by the NYS DOH Wadsworth Center for Laboratories and Research. All 14 of these people had urine mercury levels within the normal range, below 20 mcg/L. All individuals and their physicians were provided with a copy and explanation of the urine sample results.
3. The site residents' physicians were provided with educational materials regarding the toxic effects associated with exposure to mercury.
4. NYS DOH physicians talked to several members of the community, on an individual basis, about health concerns related to the site.
5. The residents moved off-site by March 1995. Residents have been financially compensated for relocation expenses by Nepera, Inc. who currently occupies the former Pyridium pharmaceutical facility.

### **Public Health Actions Planned**

1. The NYS DOH will review all site-related investigation reports and health-related information and, if necessary, hold additional public meetings.
2. The NYS DOH will continue to investigate reports of the existence of other similar sites in the community.

# CERTIFICATION

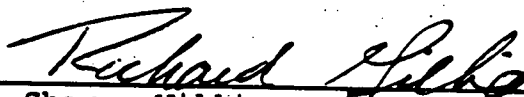
The Health Consultation for the Pyridium Mercury Disposal Site #1 was prepared by the New York State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was initiated.



Gregory V. Ulirsch, M.S.  
Technical Project Officer

Superfund Site Assessment Branch (SSAB)  
Division of Health Assessment and Consultation (DHAC)  
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this health consultation, and concurs with its findings.



for Sharon Williams-Fleetwood, Ph.D.  
Chief, SSAB, DHAC, ATSDR

**PREPARERS OF THE REPORT**

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New York State Department of Health

and

Patricia Fritz  
Assistant Research Scientist  
Bureau of Toxic Substance Assessment  
New York State Department of Health

## REFERENCES

Agency for Toxic Substances and Disease Registry (ATSDR). March 1992. Case Studies in Environmental Medicine, Mercury Toxicity. Atlanta, GA. U.S. Department of Health and Human Services.

Agency for Toxic Substances and Disease Registry (ATSDR). March 1992. Public Health Assessment Guidance Manual. U.S. Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry, Atlanta, Georgia.

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July 13, 95  
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\*\*\* ATSDR Regional Information System 2.4 \*\*\*

PAGE 1

- RECORD OF ACTIVITY -

- Author Information -

Author: Steven Jones  
User ID: SXJ6

Action Date: 05/22/95  
Time: 08:00 AM

- Site Specific Information -

Name: PYRIDIDIUM MERCURY DISPOSAL  
Address: ROUTE 17M City: HARRIMAN  
County: ORANGE State: NY Zip Code:  
CERCLIS #: CRS #: 20EV Region: 02 Congr. District: 00

- Site Status -

(1): NPL ☒ Non-NPL RCRA Non-Site Specific SACM Federal\*  
(2): Emergency Response Remedial ☒ Removal Other:

- Activities -

Incoming Call	Public Meeting*	1 Health Consult*	Site Visit*
Outgoing Call	1 Other Meeting	Health Referral	Info Provided
Confrence Call	1 Data Review	Written Respons	Training
Incoming Mail	Trip Report	Worker Health	Tech Assist
Immed Removal	Other Activity:		

- Requestor and Affiliation -

Requestor: ERIC WILSON  
Affiliation: EPA, OSC-REGION 2  
Work Phone: (908)906-6991 Other Phone: ( ) -  
Address:

County: Congressional District: 00

- Contacts and Affiliations -

KEN ORLOFF	ATSDR, DHAC/EICB
MARK MADDALONI	EPA, RISK ASSESSOR
PAT FRITZ	STATE HEALTH, NYSDOH

Program Area: Public Health Consultation

Enclosures: N

CC: A. Block	M. Maddaloni, USEPA
D. Harper	P. Fritz, NYSDOH
K. Orloff	E. Wilson, USEPA

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July 13, 95  
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\*\*\* ATSDR Regional Information System 2.4 \*\*\*  
- RECORD OF ACTIVITY -

PAGE 2

PYRIDIUM MERCURY DISPOSAL

Action Date: 05/22/95

- Narrative Summary -

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- Action Required/Recommendations/Info Provided -

Based on a residential scenario, the 25 mg/kg contaminant level that will be left in place at the site would not represent a health concern to any future residents that may inhabit the area. ATSDR is available to review any new sampling data that may be generated at this site during the course of the removal, or afterward.

Signature:

SEH

Date:

7/20/95

Concurrence:

Kenneth G. O'Neil, Ph.D.

Date:

7/14/95

500002

Memorandum

TO: The File

FROM: Irmgard Huhn *IH*

DATE: April 21, 1998

Incorporation by Reference of Prior Administrative Records into the Current Administrative Record.

During the process of selecting the activities to be taken in restarting the removal action at the Pyridium Superfund Site #1 authorized by the March 6, 1998, Action Memorandum, the Administrative Records created for the prior response activities at Pyridium #1 and Pyridium #2 Superfund sites were reviewed and are incorporated by reference in this Administrative Record. The Administrative Records for the prior response actions at the Pyridium #1 and Pyridium #2 Superfund sites are available at the U.S. EPA Region II, Removal Records Center, Building #205, Edison, NJ, and also in the Monroe Free Public Library, Mill Pond Parkway, Monroe, NY 10950.

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